



QUEL-08009

Best.-Nr.:

036 765 6

036 766 4

036 904 1

Technische Daten

Netzanschluß: 230 V ~ +6/-10% 50 Hz
Leistungsaufnahme: 210 Watt max.
Abmessungen in cm. ca.: Breite 27.5 Höhe 39.5 Tiefe 27cm

Verstärkerteil

Maximale Ausgangsleistung: 2 x 300 Watt bei Stereobetrieb
Lautsprechermindestimpedanz: 8 Ohm (Anschlußwert)
Übertragungsbereich: von 40Hz, 16kHz 1.5dB
Übersprechdämpfung: 30 dB bei 1000 Hz
FM-Bereich (UKW): 87.5 - 108 MHz
Empfindlichkeit: 6 µV
Hub: 22.5 kHz

40 kHz Hub - 46 dB S/R:
Fremdspannungsabstand:
Pilotunterdrückung:

und S/R - 26 dB:
40 µV
>50 dB
19 kHz = 40 dB
38 kHz = 50 dB
MW522-1620kHz
MW 1500 µV 26 dB S/N:

MW-Bereich

Empfindlichkeit für

Pro-Logic-Betrieb

Maximale Ausgangsleistung:

2 x 200 Watt
Hauptlautsprecher
2x 55 Watt Surround
links/Surround rechts
1x 90 Watt Center-Kanal
Dolby Surround 100Hz bis 7kHz,
Matrix 20 Hz bis 20 kHz
Hall 1 00 Hz bis 7 kHz

Signal-/Rausch-Verhältnis (im Surround-Betrieb):

>75 dB

Verzögerungszeit: 20 ms; im Dolby-Betrieb auf
15 und 30 ms umschaltbar

Verzögerungsverfahren: digital
Eingangsempfindlichkeit (Line-Eingang):

250 mv

Eingangsimpedanz:

47 kΩ

Maximale Eingangsspannung: 3.5V

Betriebsarten:

Dolby Pro Logic, Dolby 3 Stereo,
Hall, Theater und Live
REAR = Lautsprecheran. 8 - 16 Ω
CENTER = Lautsprecheran. 8 - 16 Ω
R = rechter Kanal; L = linker Kanal

Cassettenteil

Übertragungsbereich Aufnahme und Wiedergabe:
(-8 dB) 63 Hz - 12500 Hz

Geschwindigkeitsabweichung:

1.0 %

Tonhöfenschwankung:

0.3 %

Tonband:

Normal-Cassetten/Chrom
(Eisenoxid, Fe₂O₃)/CrO₂

Geräuschspannungsabstand:

50 dB

Löschdämpfung:

70 dB

CD-Spieler

Optischer Tonabnehmer:

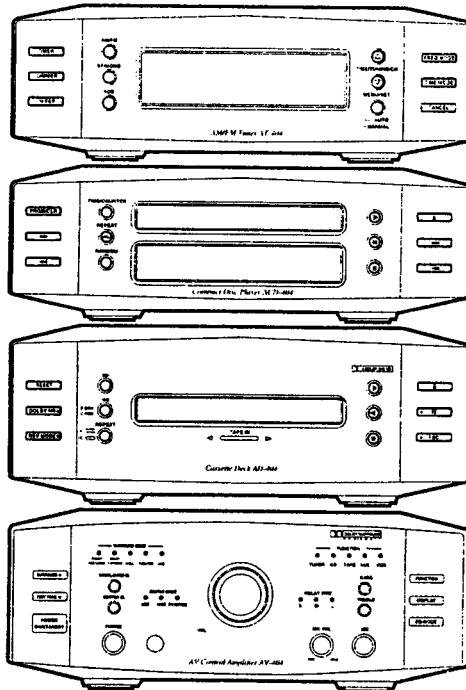
3-Strahlen-Laser

Fehlerkorrektur:

CIRC

D/A-Umwandler:

16-Bit-linear mit
8-fach Oversampling



UTS-Nr.: 999 QUELLE
Best.Nr.: 0367656/01
Ger.Bez.: UNIVERSUM-MINI-ANLAGE

GKz: G GERAET
WGT: 650 MICRO-/MINI-ANLAGEN
KD-Sektor: R RUNDFUNK
BaumNr.: 00 KEIN DIAGNOSEBAUM VORHANDEN
Klassierung: STG STEREOG., TUNER, VERST., STEUERUNG
IPW-FehlerGru.: 205 RDF., VERST., TB., PHONO, CD, CB
Type/Privileg/Universum.Nr VTC-CD165
Beschreibung DSP, RDS
VK-Preis: 899.00

Serviceart: 01 QUELLE-TKD
Garantie fuer Kunden 06 Monate
Sondervereinbarungen: 0 SIEHE SERVICEART

KAT. 964 DATUM 30.08.96 SEITEN 50

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Bedienungselemente und Funktionen

Cassettendeck

1. RESET = Bandzählwerk zurückstellen
2. ◀◀ = schneller Cassettenrücklauf Seite „B“
3. ▶▶ = schneller Cassettenvorlauf Seite „A“
4. Cassettenschublade
5. ▶ = Wiedergabe von Seite „A“
6. ◀ = Wiedergabe von Seite „B“
7. ▲ = Öffnen/Schließen der Cassettenschublade
8. II = Pausetaste
9. REC = Aufnahmetaste mit Funktionsanzeige
10. ■ = Stoptaste
11. ◁▷ = Laufrichtungsanzeigen (die jeweilige Laufrichtung der Cassette wird angezeigt)
12. REPEAT = Wiederholautomatik
13. REV MODE = Wahl der Cassettenwiedergabe
14. DOLBY NR. = Rauschunterdrückungssystem

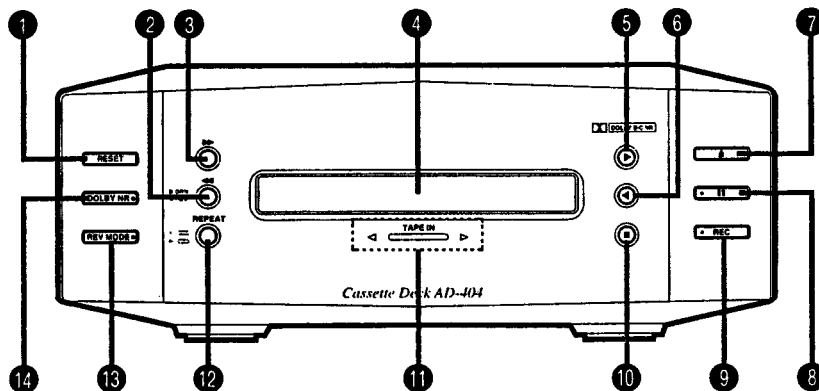
18. SURROUND MODE = Anzeige der jeweiligen Surround-Funktion
19. CENTER MODE = Anzeige der Center-Betriebsart
20. VOL = Lautstärkeregler, Gesamtlautstärke
21. DELAY TIME = Anzeige S/M/L
22. Anzeigen für die gewählte Funktion
23. BASS = Einstellen der Tiefen um +/- 10 dB
24. Wahl der Funktion
TUNER = Rundfunkwiedergabe
TAPE = Cassettenbetrieb
CD = CD-Wiedergabe
AUX = Wiedergabe von Zusatzgeräten
VCR = Tonwiedergabe von einem TV-Gerät oder Videorecorder/-kamera
25. EQ-DISPLAY = Wahl der Klangbilddarstellung
26. EQ-MODE = Wahl des Klangbildes
27. TREBLE = Regeln der Höhen um +/- 10 dB
28. MIC = Mikrofonanschluß 6,3 mm Ø
29. MIC VOL = Mikrofonmischregler
30. IR SENSOR = Fernbedienungsempfänger
31. PHONES = Kopfhörerbuchse 6,3 mm Ø
32. CENTER MODE = Wahl der Center-Betriebsart
33. Bereitschaftsanzeige ON/STANDBY
34. POWER = Netzschalter

Verstärker

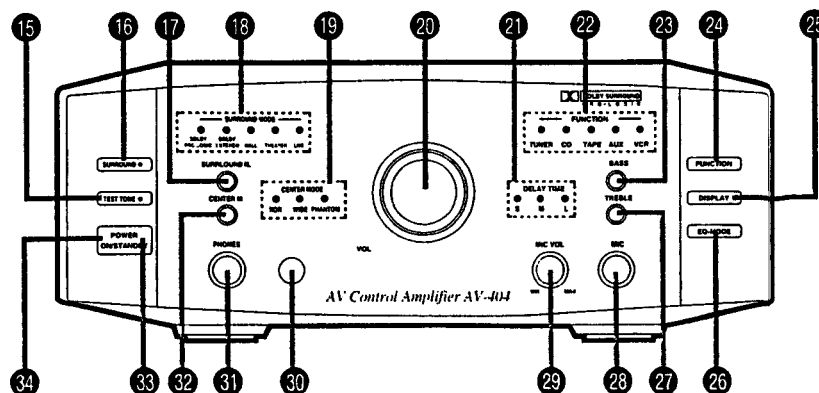
15. TEST TONE = Signal zur Abstimmung aller Pegel
16. SURROUND = Dolby Surround-Funktion ein- ausschalten
17. SURROUND M. = Wahl des Klangbildes
DOLBY PRO LOGIC = 5 Kanal-Wiedergabe
DOLBY 3 STEREO = 3 Kanal-Wiedergabe
Raumklangwahl HALL
Raumklangwahl THEATER
Raumklangwahl LIVE

Bedienungselemente

Cassettendeck



Verstärker



Tuner

35. **TIMER** = Aufrufen der Uhr- oder Timerzeit
36. **ST/MONO** = STEREO/MONO-Umschaltung
37. **FM/AM** = Wahl des Frequenzbereichs; **FM** = UKW, **AM** = Mittelwelle
38. Tunerdisplay
39. **▲ TIME/TUNING** = Einstellen der Zeit oder Frequenz nach oben (höhere Frequenzen)
40. **▼ TIME/TUNING** = Einstellen der Zeit oder Frequenz nach unten (niedrigere Frequenzen)
41. **FREQ MODE** = Wahl der Frequenzeinstellung; automatisch/manuell oder aufrufen der gespeicherten Sender
42. **TIME MODE** = Einstellen der Uhr-/Alarmzeit
43. **CANCEL** = Löschen der gespeicherten Sender
44. **MEMO/SET-AUTO/MANUAL** = Automatische/manuelle Senderspeicherung
45. **RDS** = Radio Data System-Funktionen einschalten und wählen
46. **SLEEP** = Wählen der automatischen Ausschaltzeit
47. **DIMMER** = Einstellen der Anzeigehelligkeit

Tuner-Display

- a. Surround-Anzeige
- b. **SLEEP** = Anzeige
- c. **STEREO** = Anzeige
- d. **PRGM** = Senderprogramm-Anzeige
- e. **TUNED** = Optimale Sendereinstellung
- f. **EQ MODE** = **ROCK - POP - VOCAL - CLASSIC** und **FLAT**
Anzeige der Equalizer-Charakteristik
- g. Funktion-, Frequenz-, Zeit-, Bandzählwerkanzeige
REAR LEVEL = Lautstärkeeinstellung Rückseite
CENTER LEVEL = Lautstärkeeinstellung Mitte

BASS = Einstellen der Basswerte

TREBLE = Einstellen der Höhen

h. **TIMER** = Timer-Funktionsanzeige

CD-Spieler

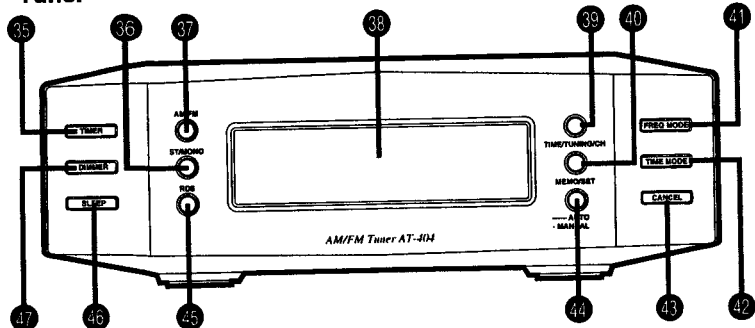
48. **PRGM/CLR** = Speichern der CD-Titel und Löschen der Programmierung
49. **TIME/COUNTER** = Umschalten von Zeit- auf Zählwerksanzeige
50. CD-Schublade
51. **▶** = Wiedergabetaste für CD
52. **▲** = Öffnen der CD-Schublade
53. **▶▶** = Titelwahl vorwärts
54. **◀◀** = Titelwahl rückwärts
55. **||** = CD-Pause
56. **■** = CD-Wiedergabe beenden
57. CD-Spielerdisplay
58. **RANDOM** = Wiedergabe einer Zufallsreihenfolge
59. **REPEAT** = Wiederholautomatik eines/aller Titel
60. **◀** = Suchlauf rückwärts
61. **▶** = Suchlauf vorwärts

CD-Spielerdisplay

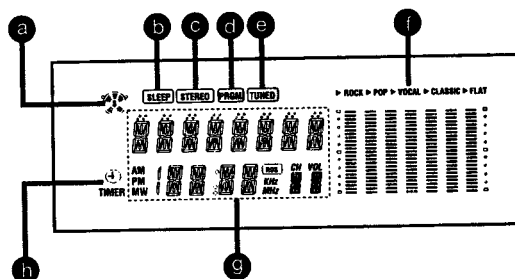
- i. **RANDOM** = Wiedergabe einer Zufallsreihenfolge
- j. **▶** = Anzeige für CD-/Cassetten-Wiedergabe
- k. **||** = Anzeige der Pausenfunktion
- l. **◀** = Cassettenwiedergabe im Reverse-Mode
- m. Spielzeit-/Titelnummernanzeige
- n. Anzeige der gewählten Repeatfunktion
- o. Titelnummernanzeige in Balkenform
- p. **PROGRAM** = Anzeige für Wiedergabe einer Programmreihenfolge

Bedienungselemente

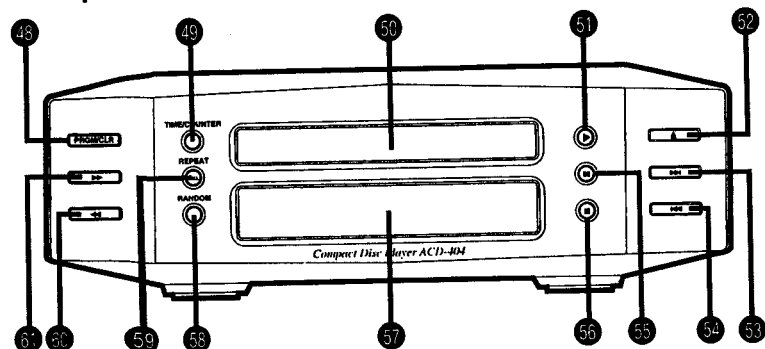
Tuner



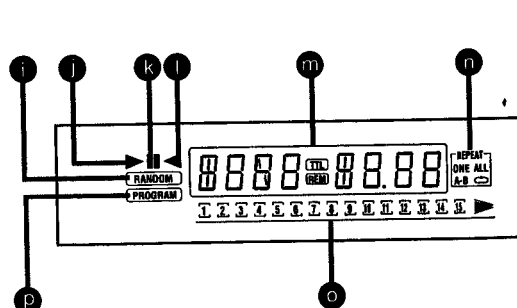
Display



CD-Spieler



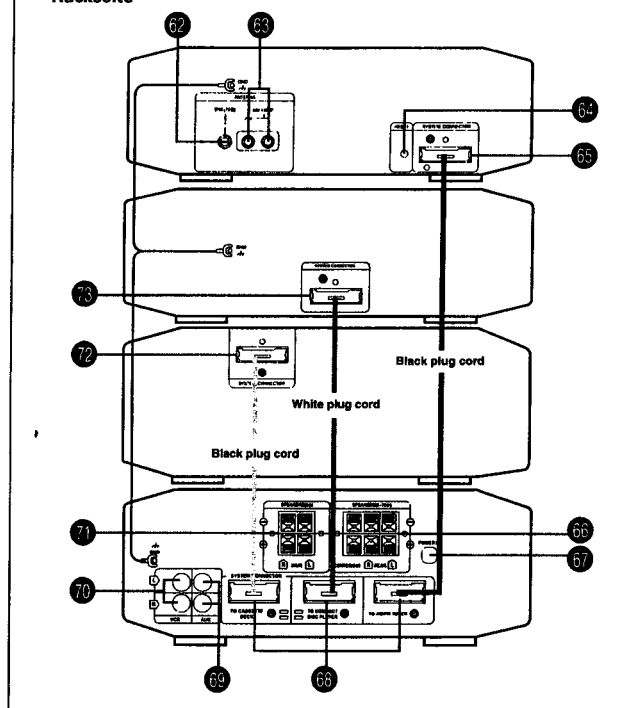
Display



Anschlüsse Rückseite

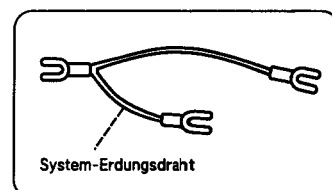
Bedienungselemente

Rückseite



Rückseite

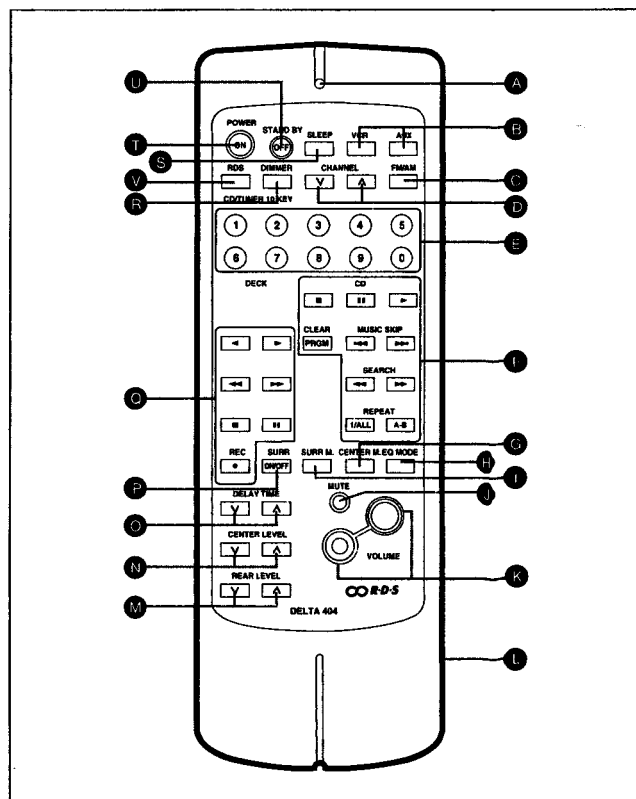
- 62. **FM** (UKW)=Antennenbuchse
- 63. **AM** (MW)=Antennenanschlüsse
- 64. **RESET**=Speicherrückstelltaste
- 65. Anschluß für Tuner-Systemsteuerung
- 66. Pro Logic-Lautsprecheranschlüsse
CENTER=Lautsprecheranschluß
R=Rechter Kanal (Rear)
L=Linker Kanal (Rear)
- 67. Netzanschlußkabel 230V/50Hz
- 68. Anschlüsse für Systemsteuerung Cassettendeck, CD-Spieler und Tuner
- 69. **AUX R/L**=Anschluß für Zusatzgeräte
R=rechter Kanal (rot)
L=linker Kanal (weiß)
- 70. **VCR R/L**=Anschluß für Zusatzgeräte ; z. B. TV-Gerät oder Videokamera/recorder zur Tonwiedergabe
R=rechter Kanal (rot)
L=linker Kanal (weiß)
- 71. **SPEAKER**=Stereolautsprecheranschluß
R=rechter Kanal (rot)
L=linker Kanal (weiß)
- 72. Anschluß für TAPE-Systemsteuerung
- 73. Anschluß für CD-Systemsteuerung (weiße Stecker)



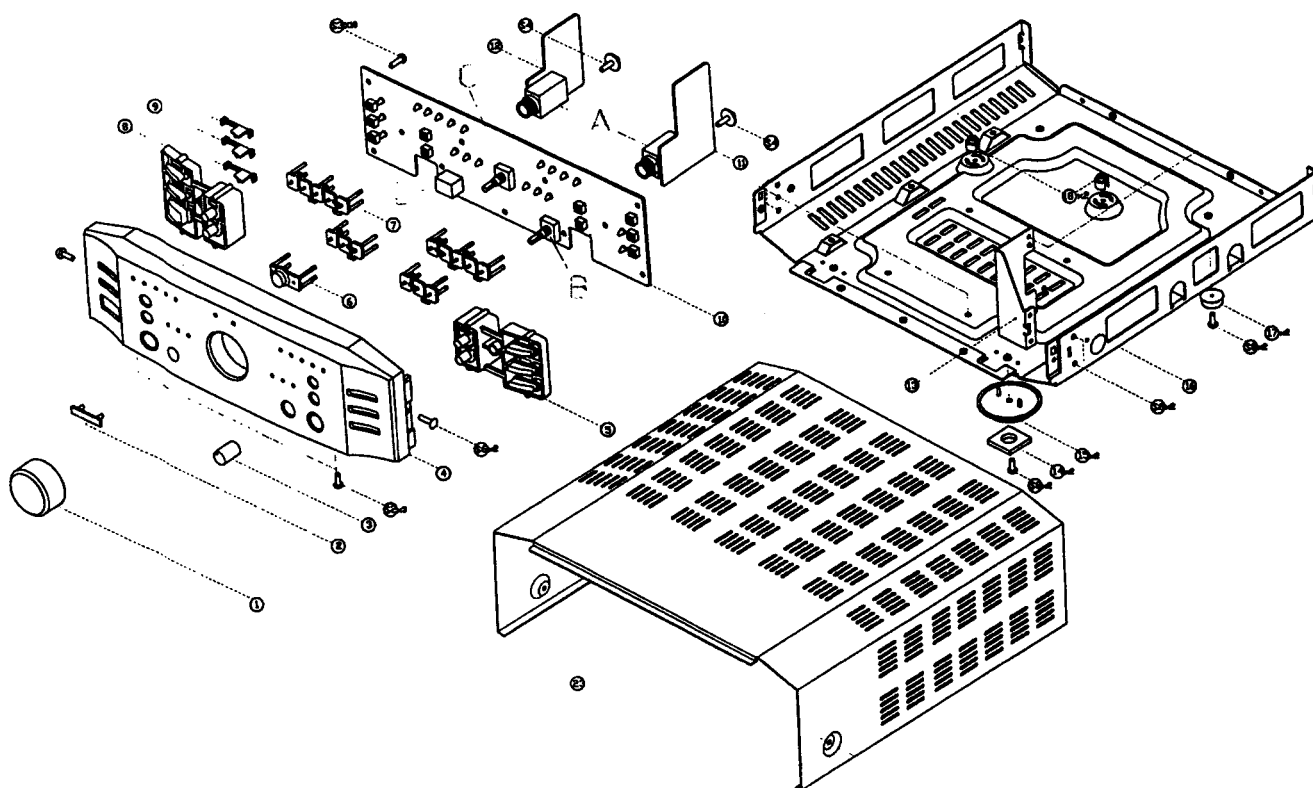
Fernbedienung

- A. Funktionsanzeige in zwei Farben:
rot=allgemeine Funktionen. **grün**=nur CD-Spielers
- B. Funktionstasten VCR-AUX
- C. **FM/AM**=Wählen des Frequenzbereichs
- D. **CHANNEL** = Aufrufen der gespeicherten Sender
- E. **1-0**=Aufrufen der Senderspeicher/CD-Titel
- F. Funktionstasten CD-Spieler:
■ =CD-Stop, ■■=CD-Pause, ►=CD-Wiedergabe
PRGM=Speichern der CD-Titel/Löschen der Programmierung,
◀=Titelwahl rückwärts, ▶=Titelwahl vorwärts,
◀◀=Suchlauf rückwärts, ▶▶=Suchlauf, vorwärts
REPEAT 1/ALL=Wiederholautomatik, A-B=Wiederholung
- G. **CENTER M.**=Wahl der Center-Betriebsart
- H. **EQ MODE**=Wahl des Klangbildes
- I. **SURR. M.**=Ein-/Ausschalten der SURROUND-Funktion
- J. **MUTE**=Absenken der Lautstärke
- K. **VOLUME +/-** =Lautstärkeeinstellung
- L. Batteriefach (Rückseite) für 2x 1.5V Micro-Batterien
- M. **REAR LEVEL**=Lautstärkeeinstellung Rückseite
- N. **CENTER LEVEL**=Lautstärkeeinstellung Mitte
- O. **DELAY TIME**=Einstelltasten für die Zeitverzögerung
- P. **SURR: ON/OFF**=Surround-Funktion Ein-/Ausschalten
- Q. Funktionstasten für Cassettenbetrieb:
◀/▶=Cassettenwiedergabe Seite "A" oder "B",
◀◀=Suchlauf vorwärts, ▶▶=Suchlauf rückwärts, ■=Stop,
■■=Pause, **REC**=Aufnahmetaste
- R. **DIMMER**=Einstellen der Anzeihelligkeit (ohne Funktion)??
- S. **SLEEP**=Wählen der automatischen Ausschaltzeit
- T. **POWER ON**=Einschalten der Anlage aus Bereitschaft
- U. **STAND BY OFF**=Ausschalten in Bereitschaft
- V. **RDS**

Bedienungselemente und Funktionen



EXPLOSION VERSTÄRKER

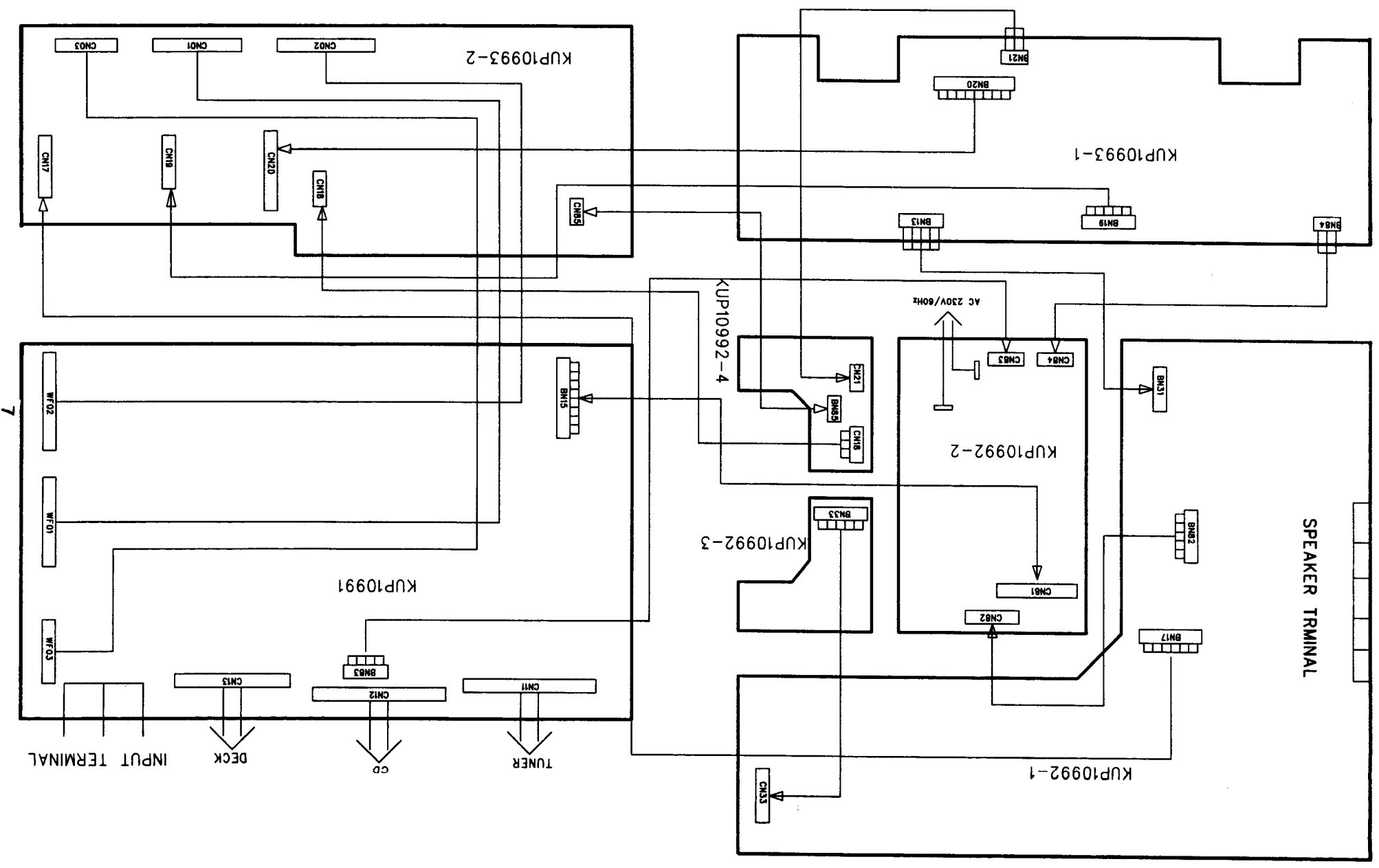


IC71(ANAM1198AV)

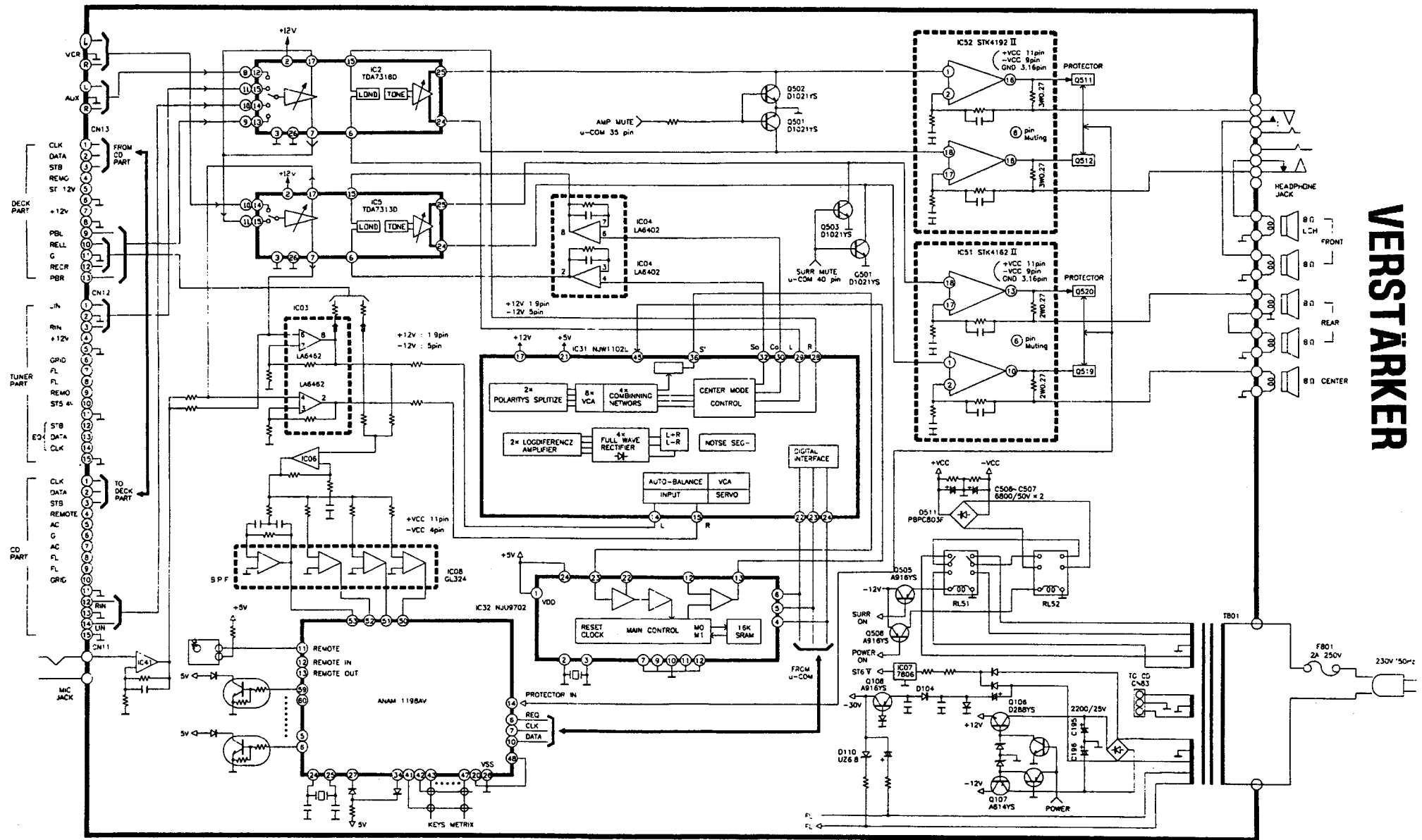
PIN No.	PIN NAME	I/O	DESCRIPTION	REMARK
59~61	P70~P77 P00~P04	I/O	CENTER MODE INDICATOR	
62, 63		I/O	62 PIN ON : H, 63 PIN OFF : H	
64		I/O	TEST TONE INDICATOR	
1~7		I/O	SURR ON/OFF, SURR MODE INDICATOR	
8, 9, 10	P05 P07	I/O	DISPLAY CONTROL DATA BUS (8 PIN:REQ, 9PIN:CLK, 10 PIN : DATA)	
11	INT O		SENSOR REMOTE INPUT	
12	INT I		BUS LINE REMOTE INPUT	
13	INT2/TC1		BUS LINE REMOTE OUTPUT	
15, 16	P14, P15	O	15 PIN : DATA, 16 PIN : CLK	FOR TDA7313
17, 18	P16, P17	O	17 PIN : DATA, 18 PIN : CLK	FOR TDA7318
23	RESET	O	MI COM RESET PORT	
24, 25	XIN, XOUT	I/O	CRYSTAL INPUT/OUTPUT	
27~31	P30~P34	O	FUNCTION LED DRIVE	
32~34	P35~P37	O	DELAY TIME LED DRIVE	
35	P40	O	AMP MUTE PORT	ACTIVE "L"
36	P41	O	POWER ON/OFF PORT	ACTIVE "L"
37, 39, 19	P42, P44, P20	O	EQ DISPLAY (19 PIN:STB, 37 PIN:CLK, 39 PIN:DAT)	TO TUNER MI COM
40	P45	O	SURR MUTE PORT	ACTIVE "L"
41~47	P46,P47,P50~P54	I/O	KEY METRIX	
49	VAREF		V ANALOG REFERENCE PORT	
50~53	P60~P63	I/O	160Hz, 400Hz, 2.5KHz, 6.3KHz, A/D CONVERTOR (EQ. LEVEL)	TO TUNER MI COM
56, 57	P66, P67	I	VR UP/DOWN DATA INPUT	
58	GND		+5V	
20, 26, 48	VSS		GND	

AMPLIFIER

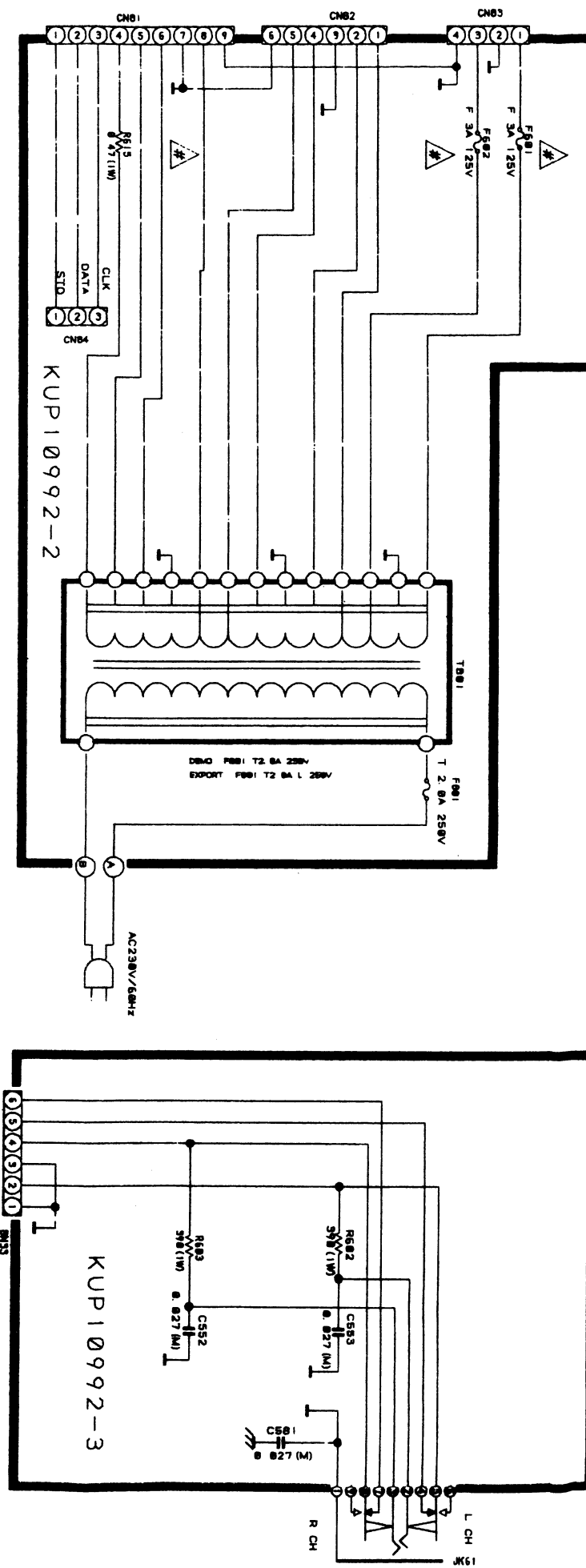
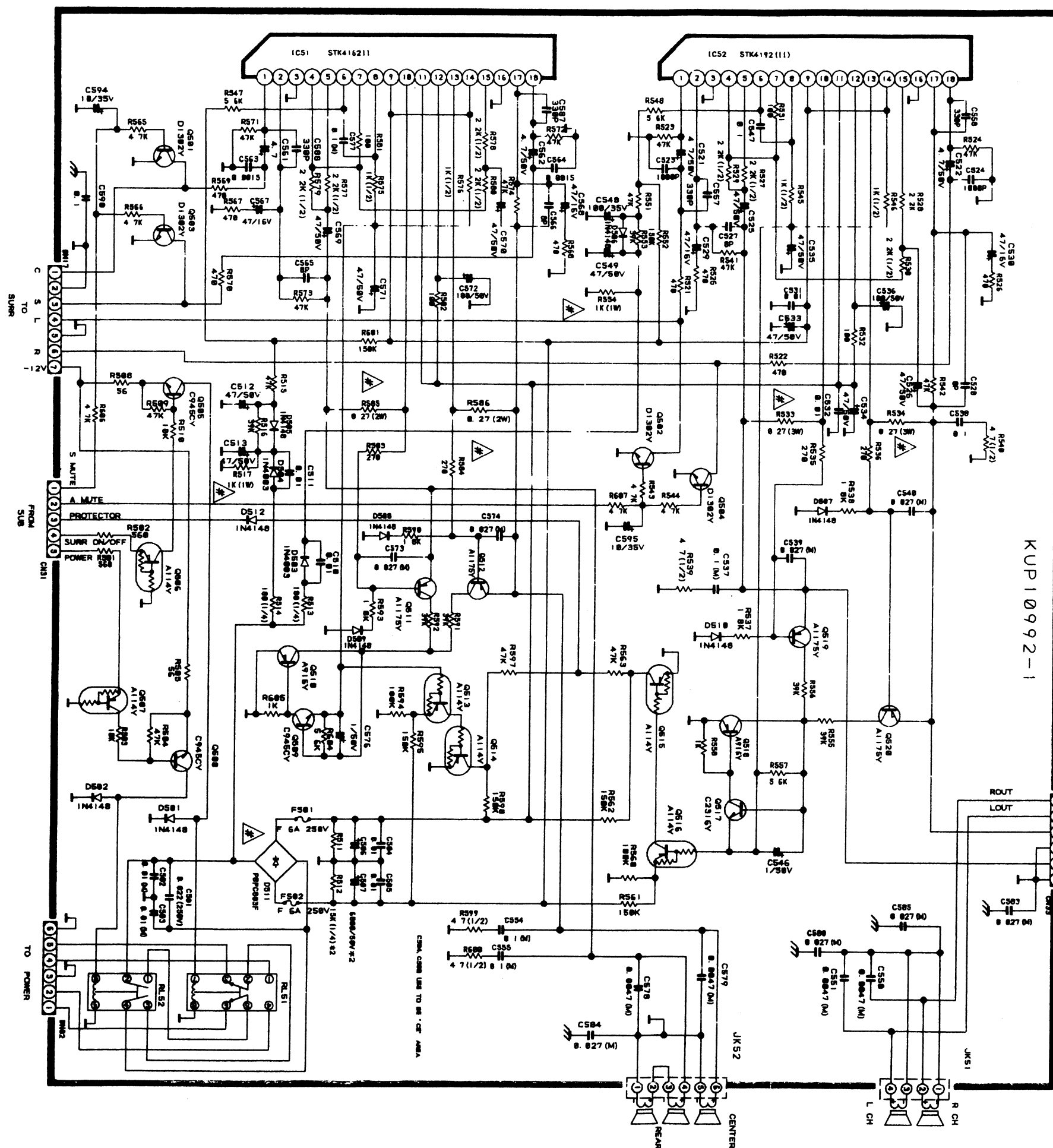
VERDRAHTUNGSPLAN VERSTÄRKER



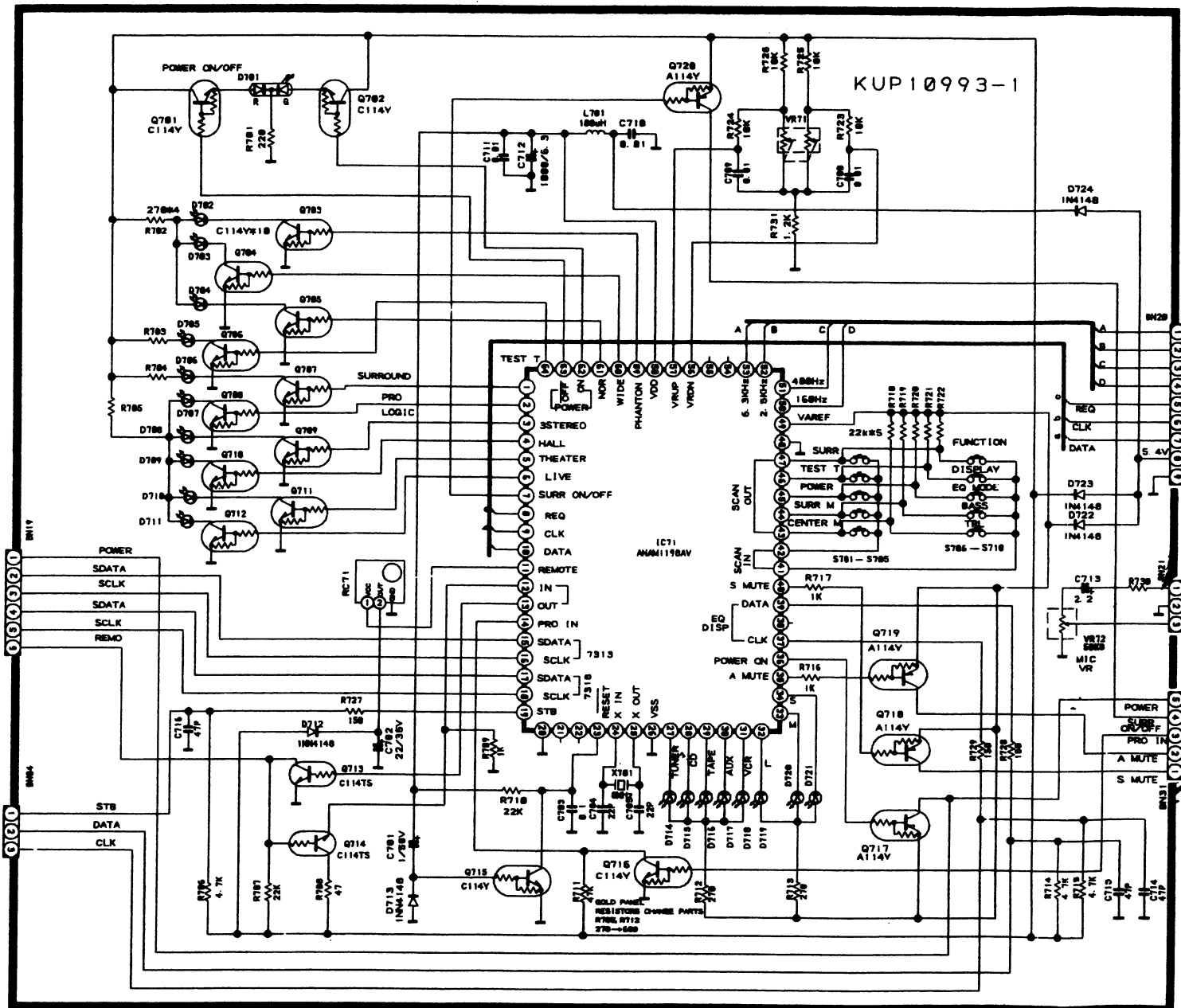
BLOCK DIAGRAM



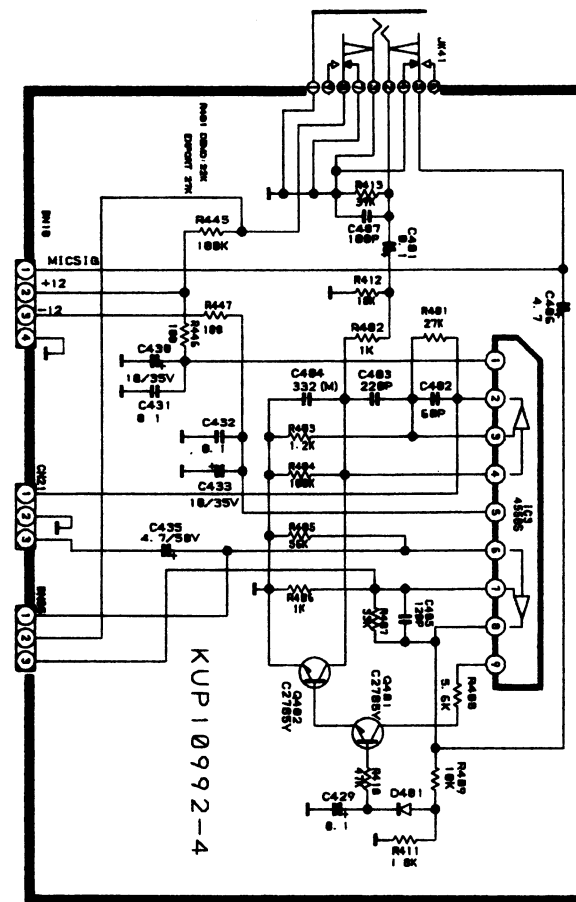
VERSTÄRKER AV-404



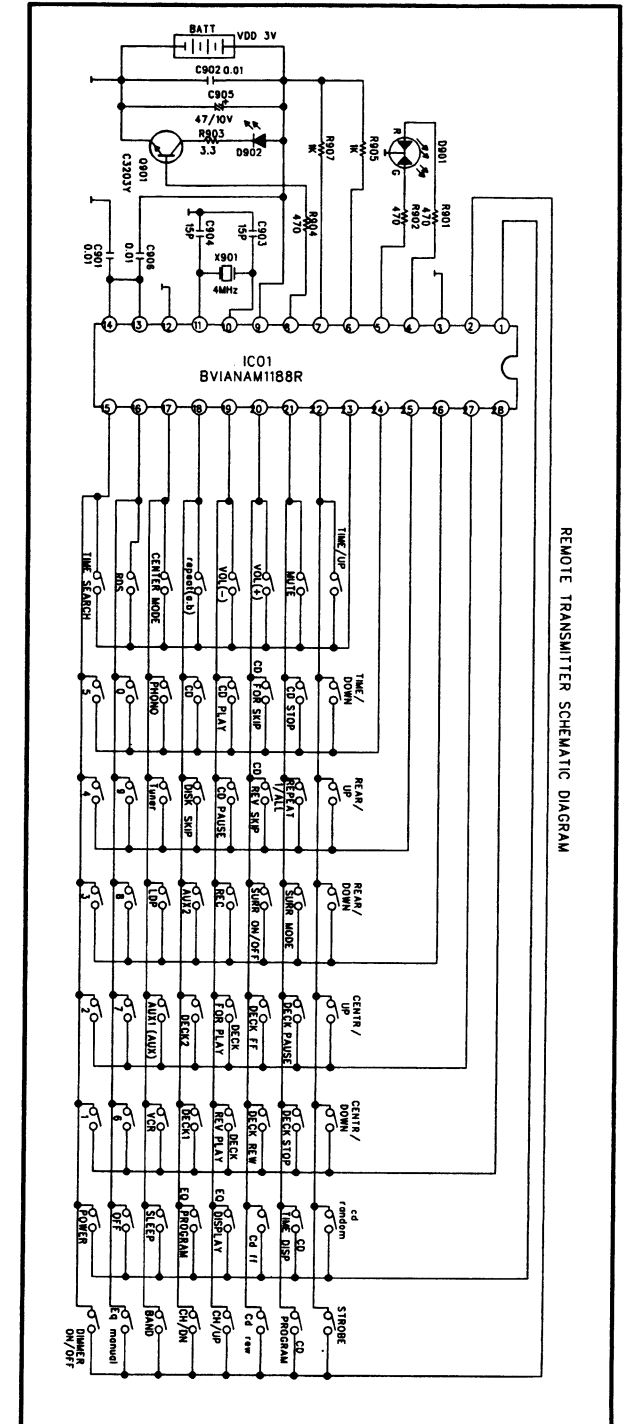
VERSTÄRKER AV-404



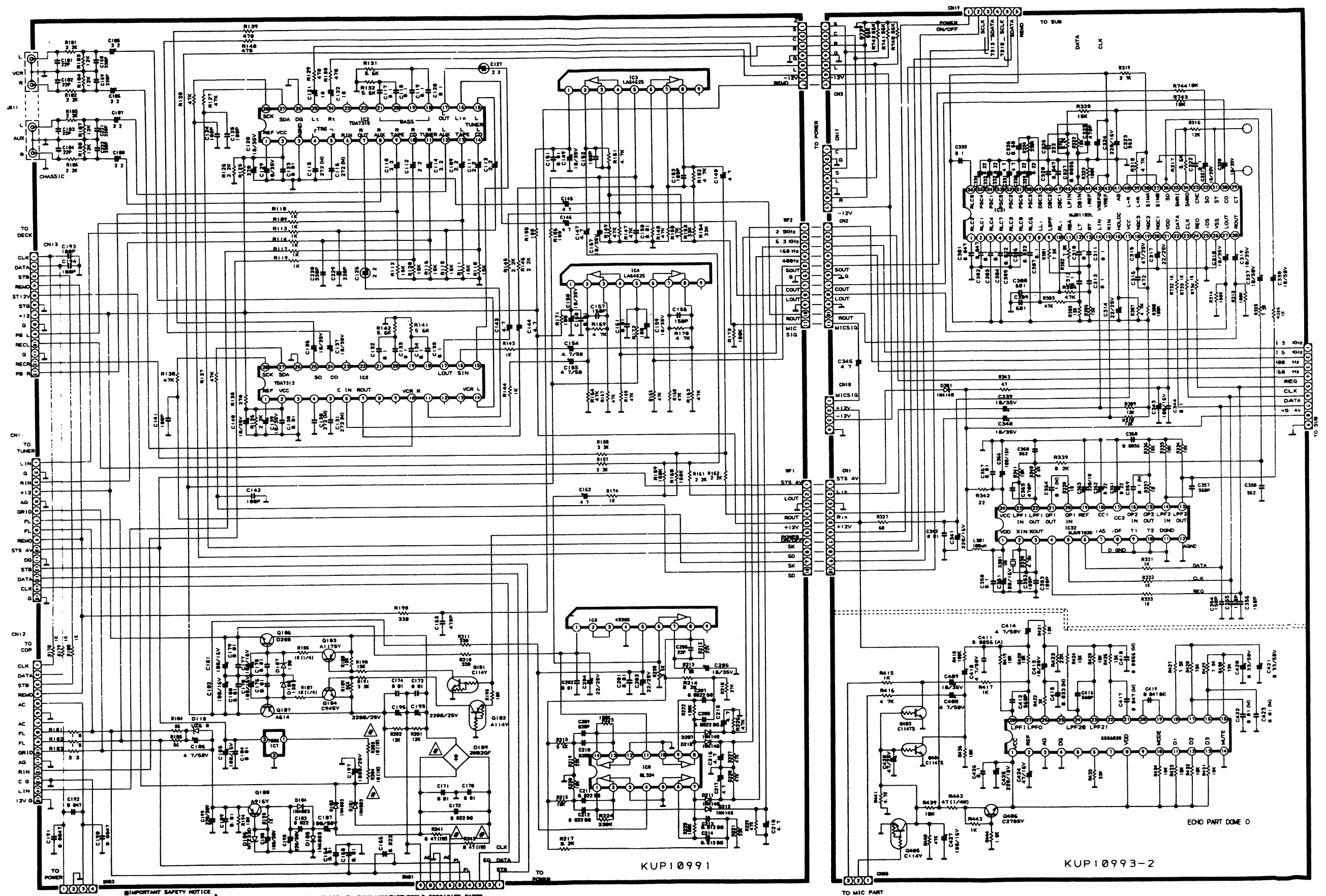
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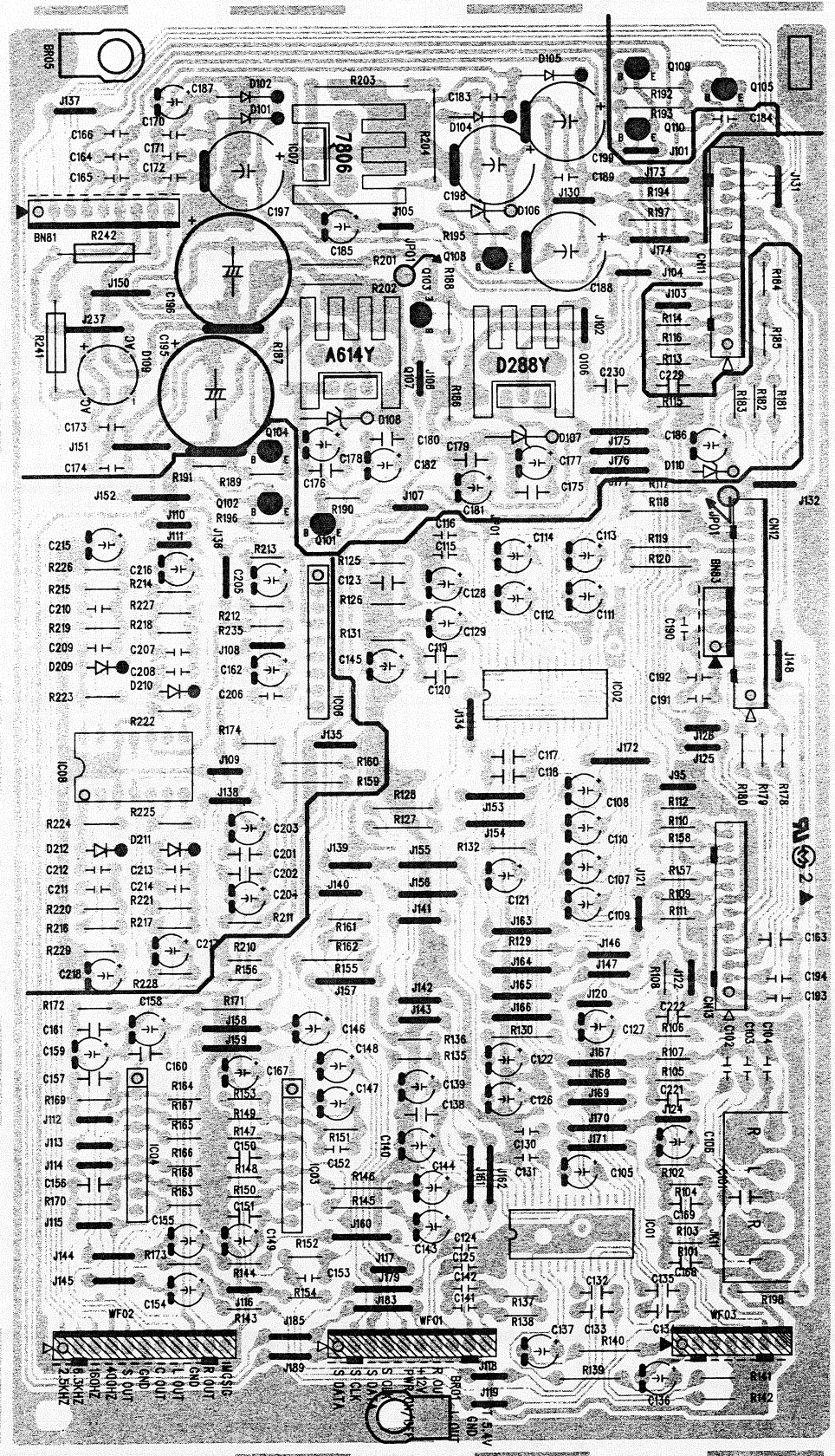
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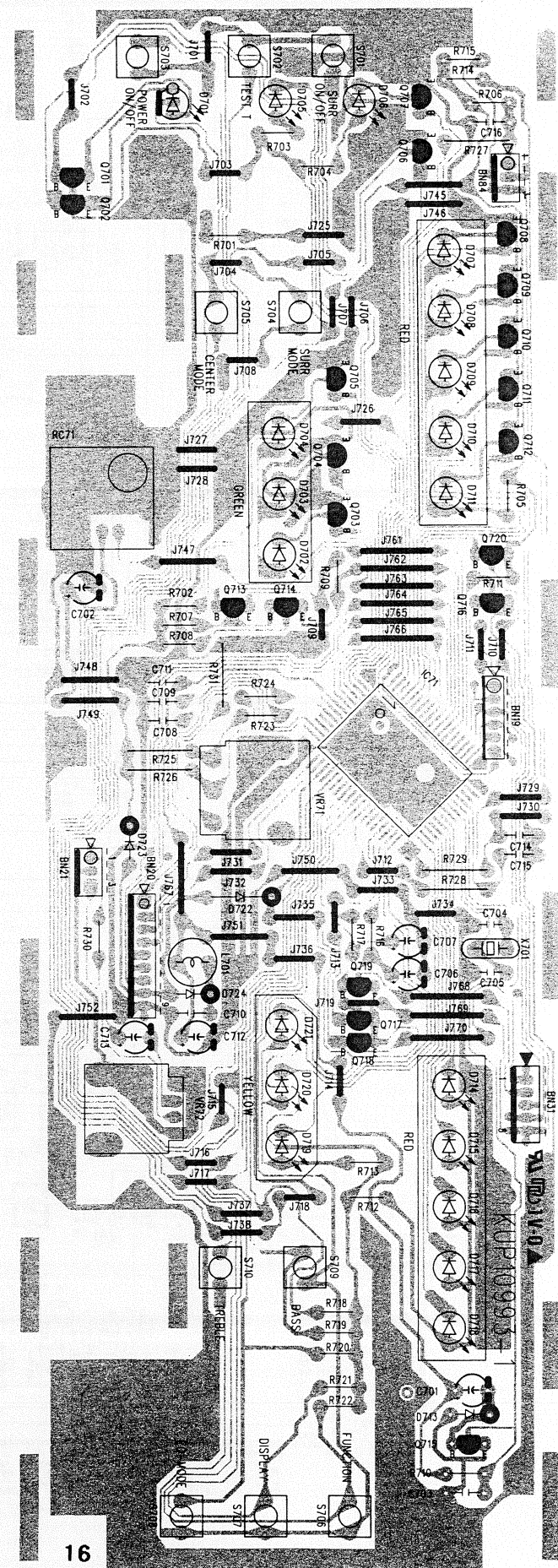

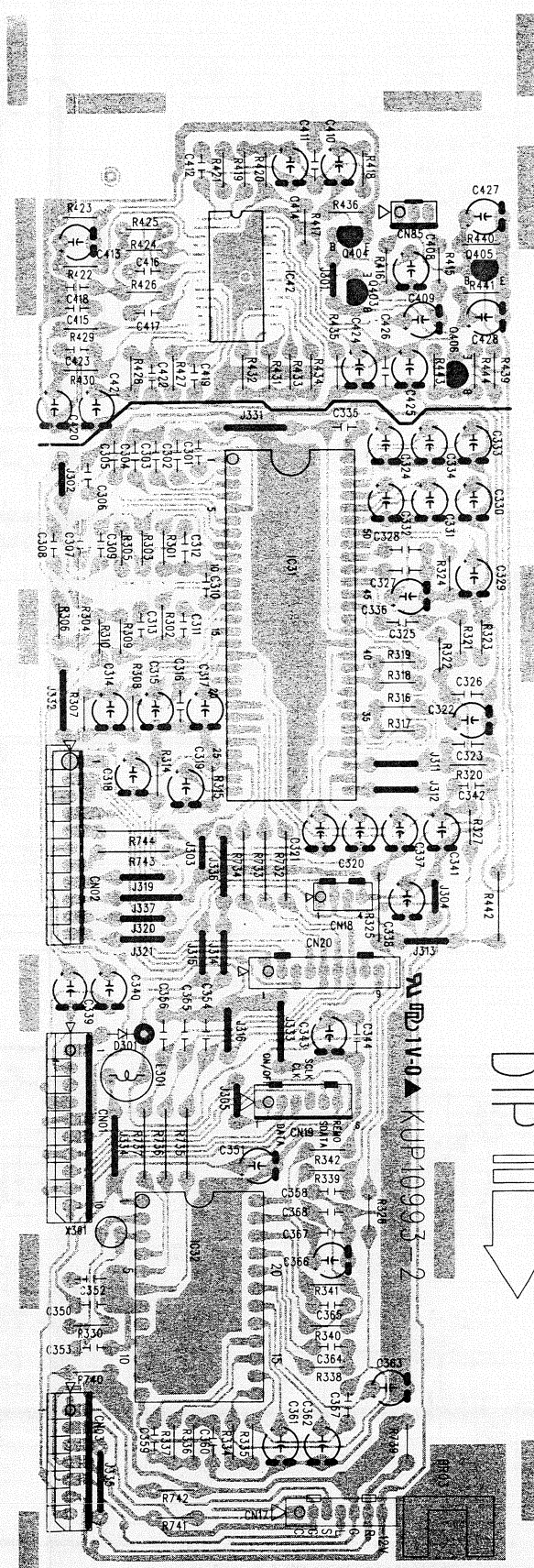
VERSTÄRKER AV-404 DPL



PRINTED CIRCUIT BOARDS

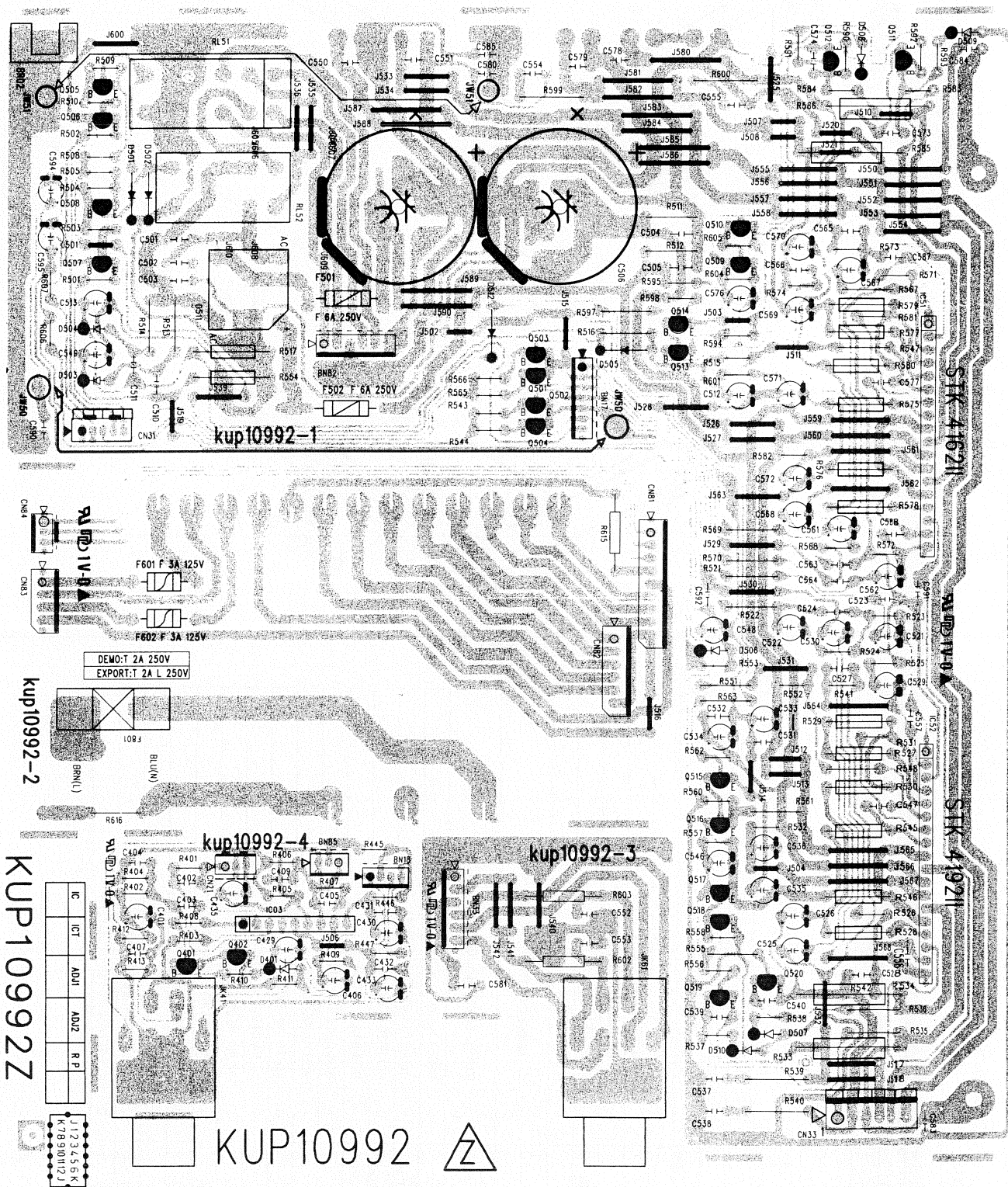


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16

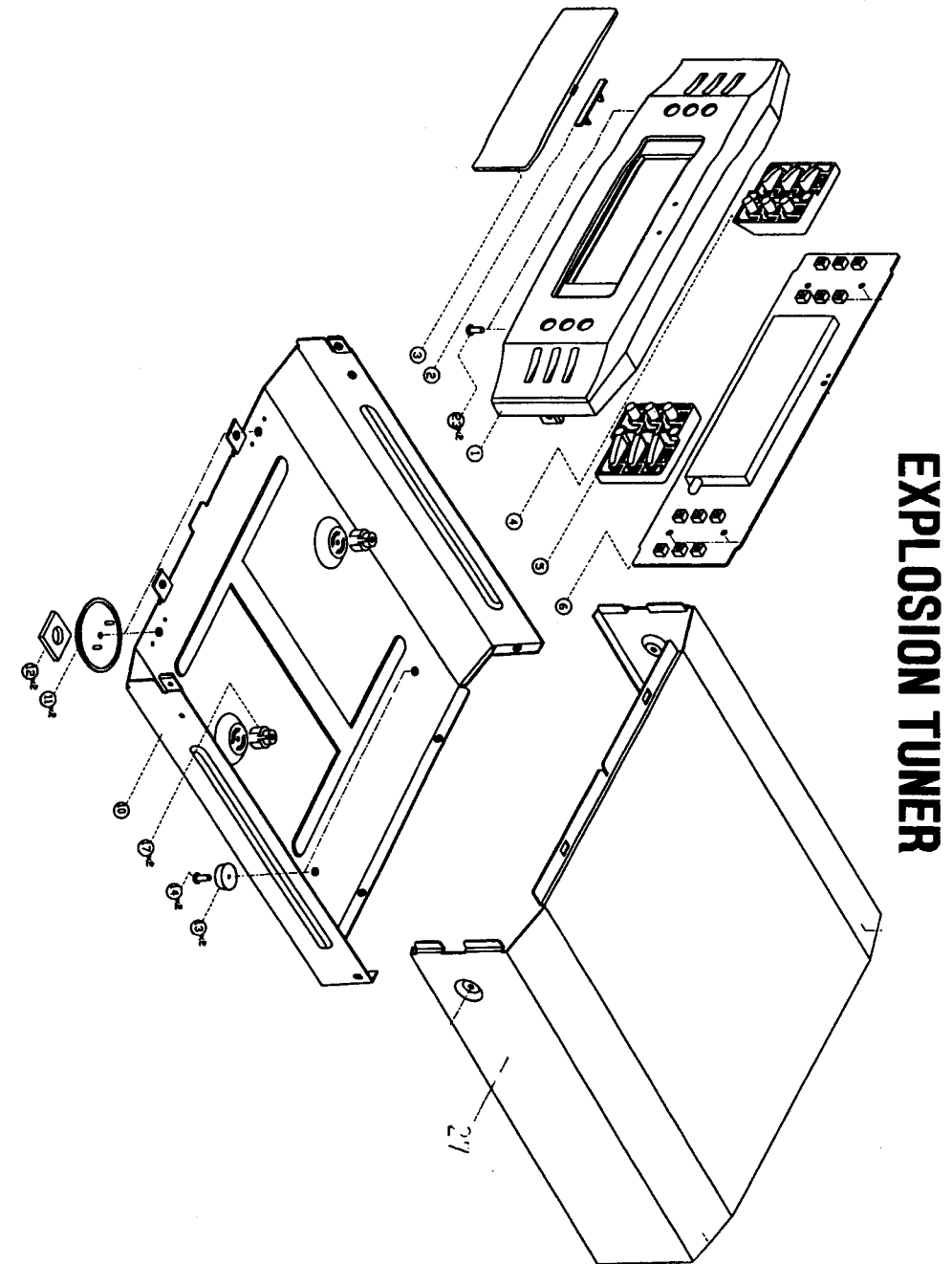
PLATINE ENDSTUFE



IC31: ANAM1201T

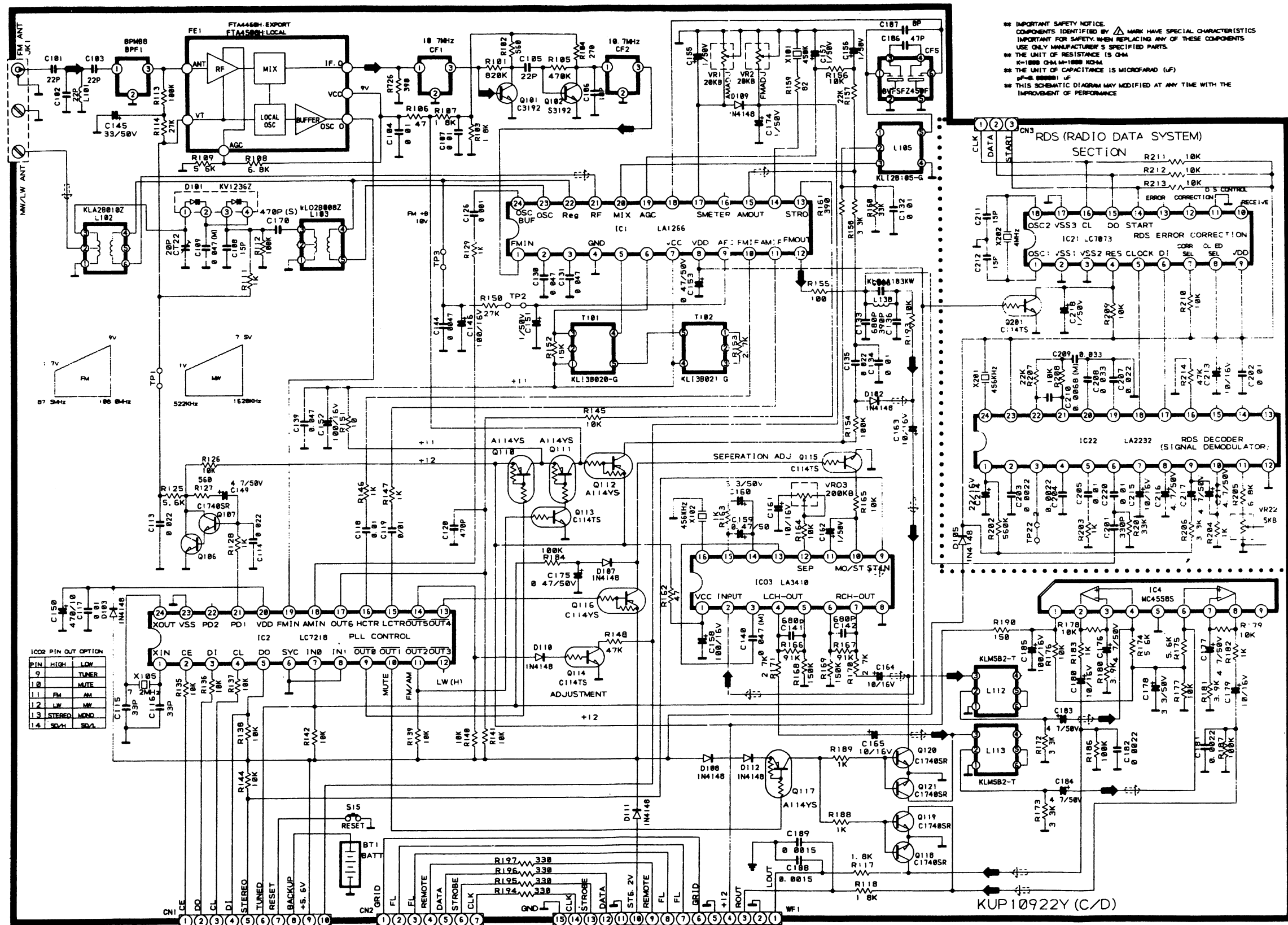
PIN No.	SYMBOL	I/O	DESCRIPTION
1, 25	V _{DD}	I	V _{DD} , 5V ±10%
2-5	KEY0-KEY3	I	KEY METRIX INPUT
98-100	KEY4-KEY9	O	KEY METRIX OUTPUT
10, 13	SCK1, SI1, INT3	I	EQ DISPLAY DATA, CLOCK, STROBE
14-17	AIN0-AIN3	I	AREA OPTION
21	AIN7	I	STEREO INDICATOR INPUT
20	AIN6	-	SIGNAL DETECTOR
18	AIN4	-	KOREA MODE. ZIG PORT
22, 30	V _{SS}	I	DEVICE PORT
23	V _{ASS}	I	ANALOG DEVICE PORT
24	VAREF	I	REFERENCE VOLT INPUT
26	STOP MODE	I	MEMORY H/L
27	TEST	I	N.C (GND)
28	XTIN	I	32.768KHz CRYSTAL TIME OPERATOR
29	XTOUT	O	
31	X IN	I	8.0MHz CRYSTAL μ-COM OPERATOR
32	X OUT	O	
33	RESET	I	RESET SIGNAL INPUT
34	P10 (INT0) REMOTE IN	I	REMOTE CONTROL SIGNAL INPUT
35	INT1 REMOTE OUT	O	REMOTE CONTROL SIGNAL OUTPUT
36	INT2	I	RDS START INPUT
7	SCK2	I	RDS CLOCK INPUT
8	SI2	I	RDS DATA INPUT
48	P06	O	MUTE OUTPUT
42	P00-P03	I	DATA IN PLL IC CONTROL
43	P00-P03	I	CE PLL IC CONTROL
44	P00-P03	O	CLOCK PLL IC CONTROL
45	P00-P03	O	DATA OUT PLL IC CONTROL
50	V _{KK}	-	-30V
51-66	G15-G0	O	FIP GRID DRIVE OUTPUT
67-89	S6-S26	O	FIP SEGMENT DRIVE OUTPUT

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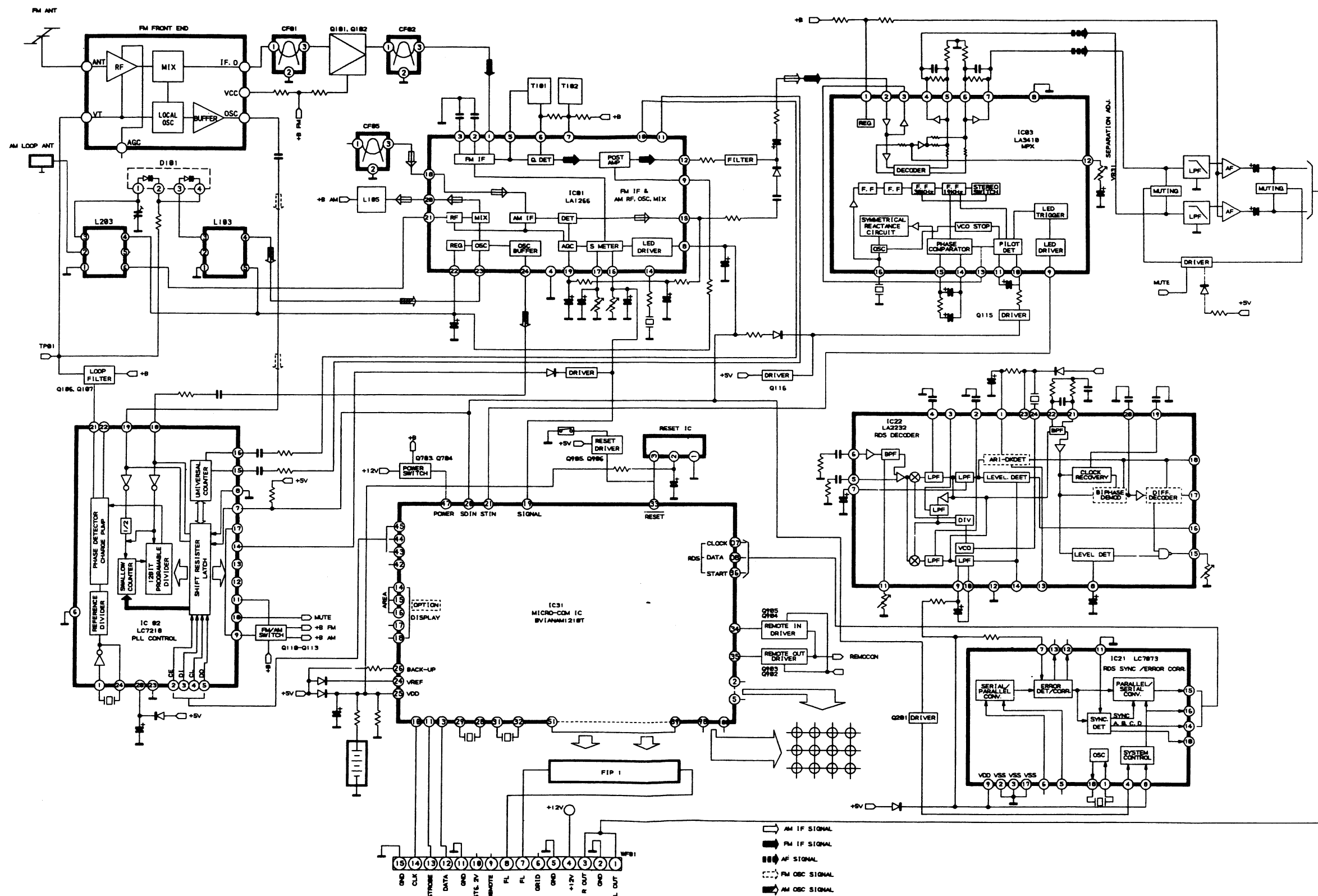


SCHEMATIC DIAGRAM

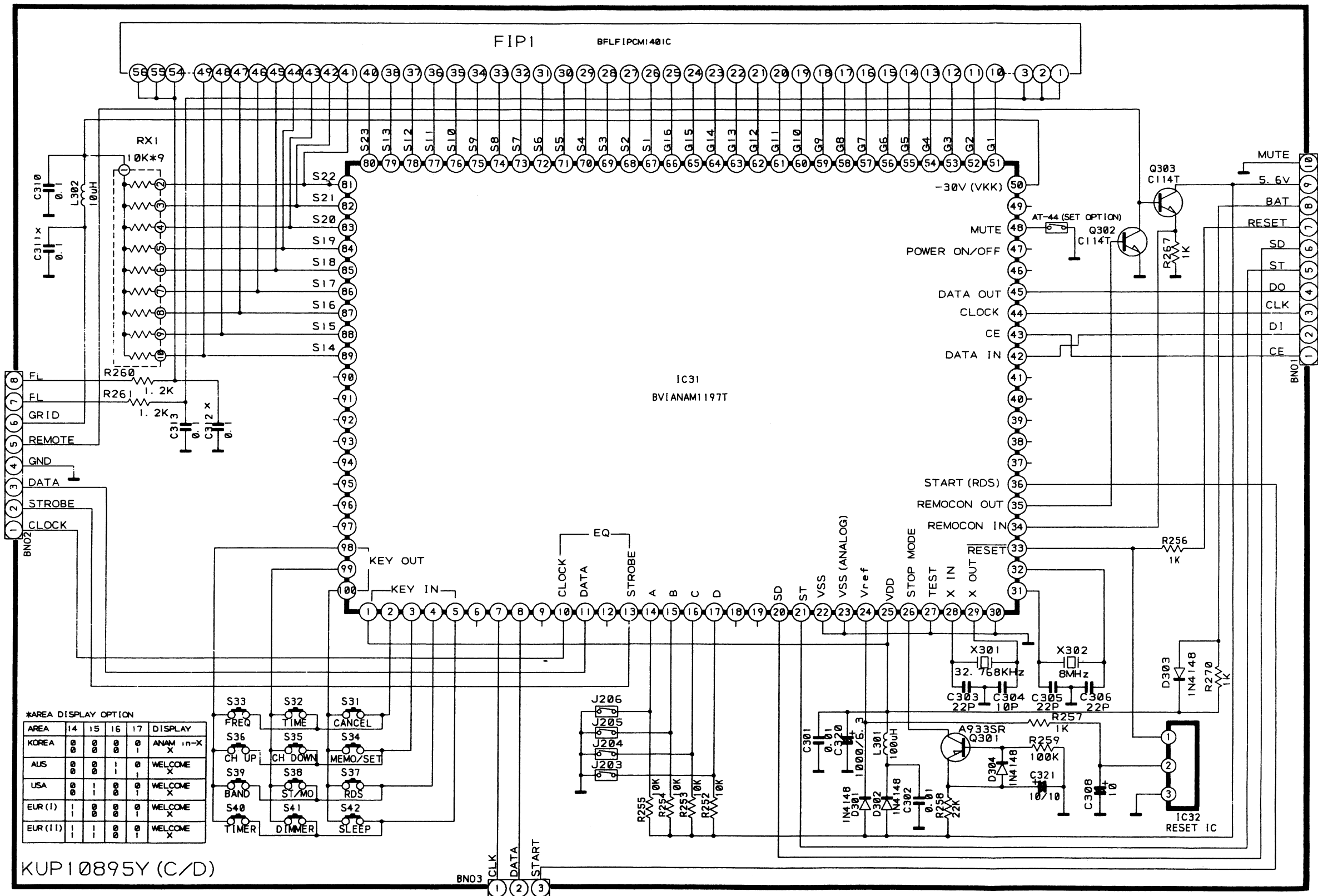
TUNER



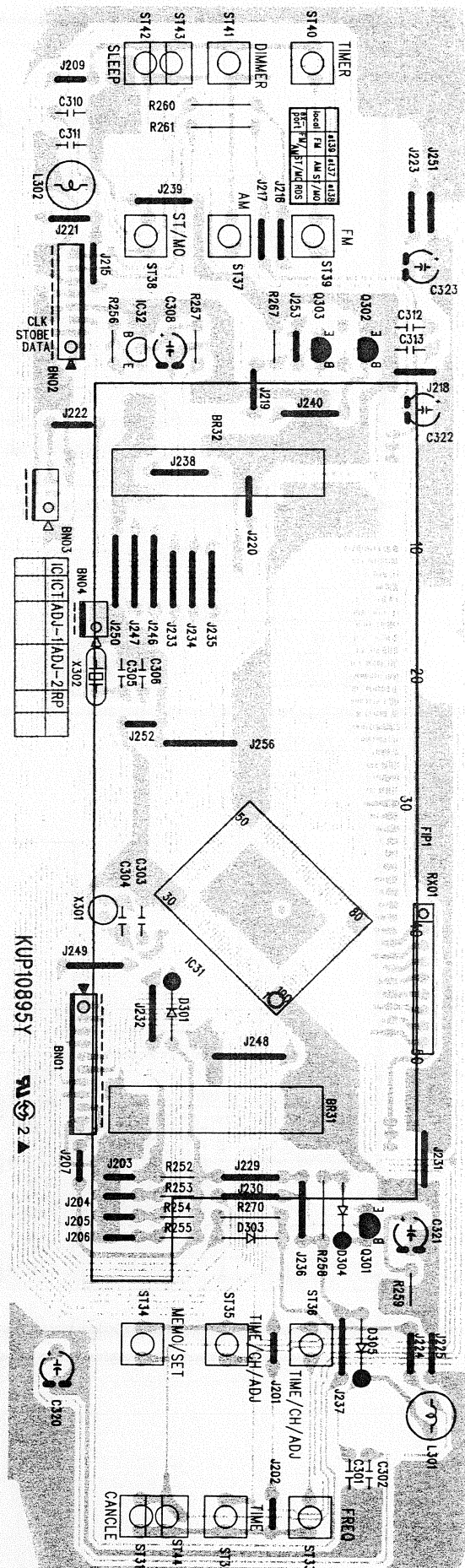
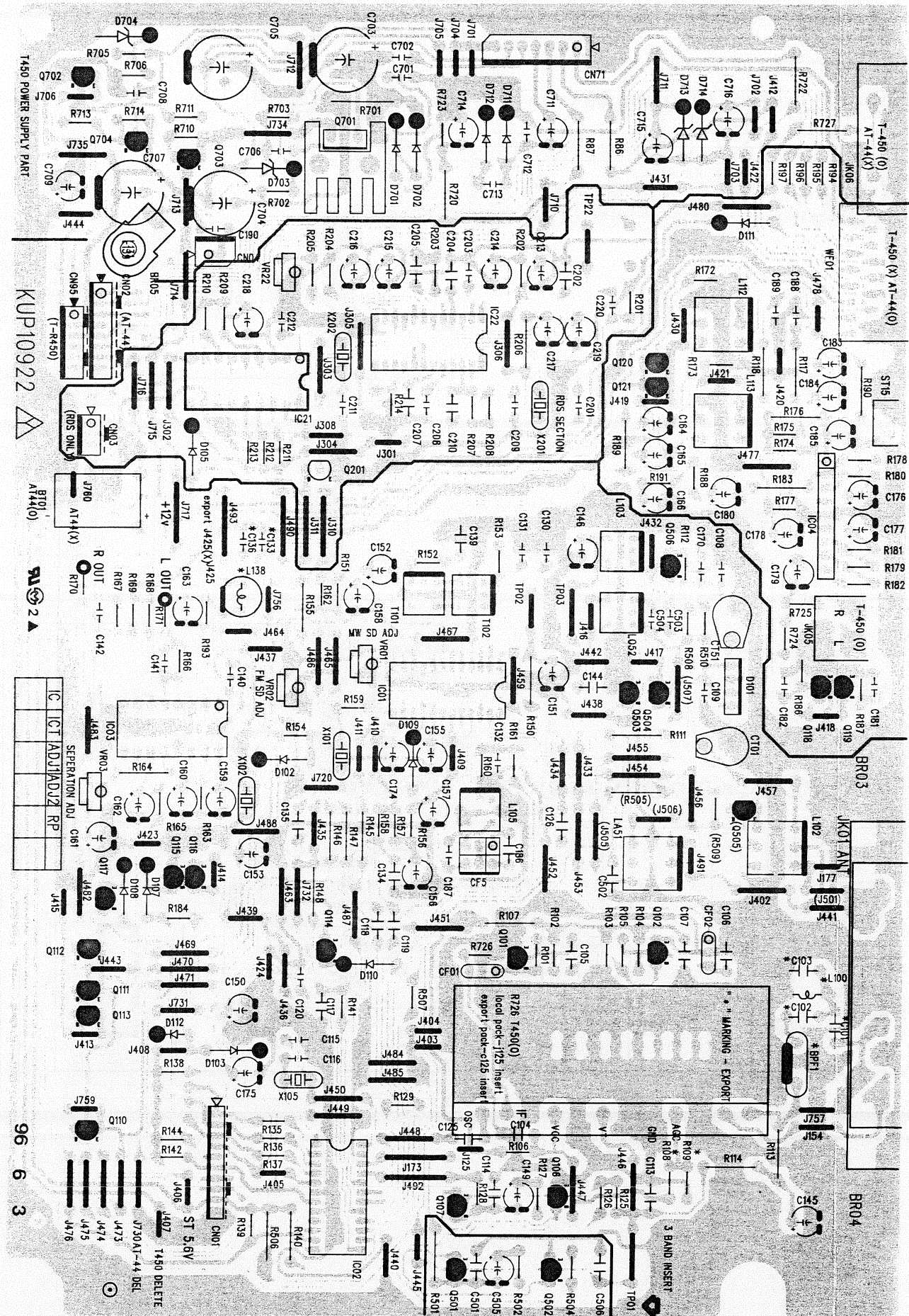
BLOCK DIAGRAM



TUNER DISPLAY



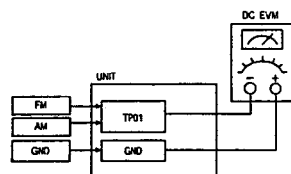
PRINTED CIRCUIT BOARDS



MEASUREMENTS AND ADJUSTMENTS

1. TUNING FREQUENCY RANGE ADJUSTMENTS

(FM) DC VOLT METER CONNECT TO TEST POINT TP1 and GND
(AM) DC VOLT METER CONNECT TO TEST POINT TP1 and GND

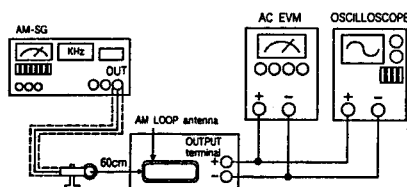


NO.	Band	Frequency	Adjust for	Adjustment
1	FM	87.50MHz	1.5V	L4
2	AM	522KHz	1V	L103

2. AM TRACKING ADJUSTMENT

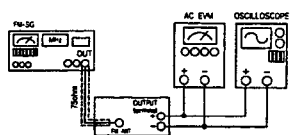
Signal Generator Connects to the AM ANT. Coil through the loop antenna.
Adjust for the indication of VTVM of the wave form of scope to be maximum.

BAND	Step	Frequency	Adjust for	Adjustment
AM	1	612KHz	Maximum sensitivity	L102
	2	1503KHz	Maximum sensitivity	CT01
	3	Repeat steps 1 and 2 several times.		



3. FM-RF ADJUSTMENT

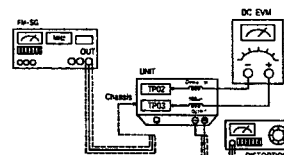
Signal Generator Connect to FM ANT JACK (FM IN) through the dummy.



NO.	Frequency	Adjust for	Adjustment
1	90.10MHz	Maximum Sensitivity	L1, L2, L3
2	Repeat step 1 several times.		

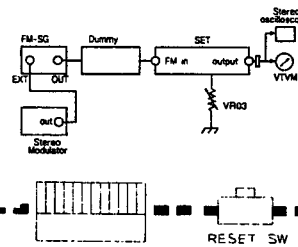
4. FM MONO DISTORTION ADJUSTMENT

DC VOLT METER Connect to TP02(-), TP03(+)
Signal Generator Connect to FM ANT Jack (FM IN) through the dummy.
Distortion Meter Connect to the output.



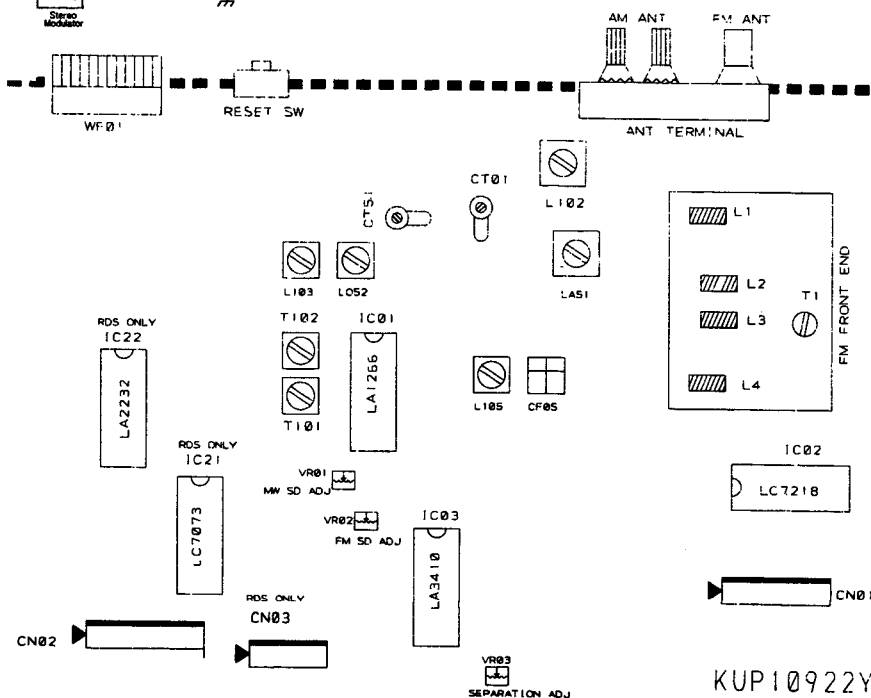
NO.	Frequency	Adjust for	Adjustment
1	100.10MHz	DC Voltmeter 0V	T101
2	100.10MHz	Minimum T.H.D	T102
3	Repeat steps 1 and 2 several times.		

5. FM STEREO SEPARATION

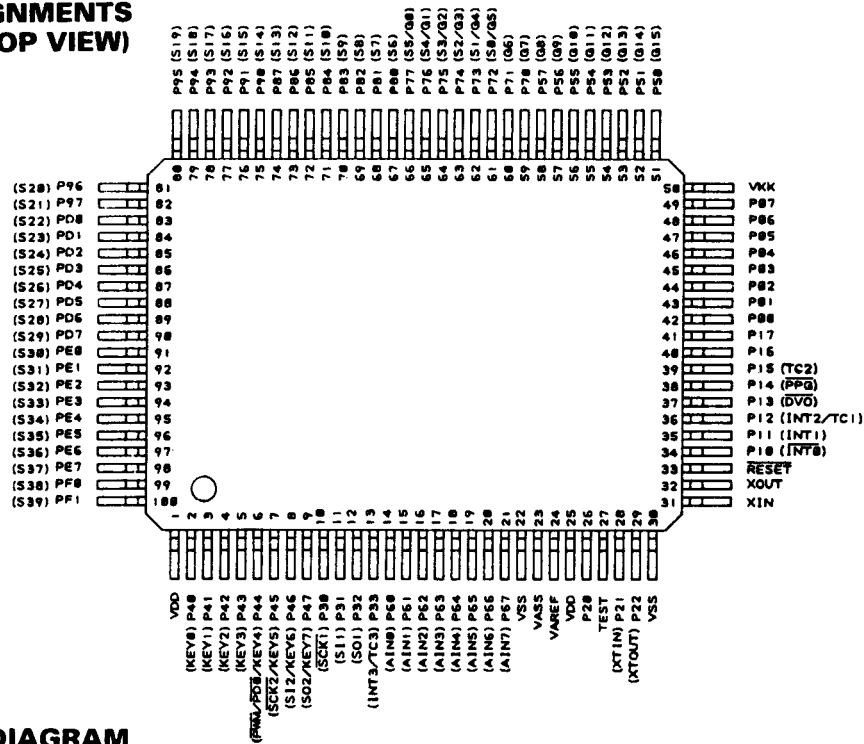
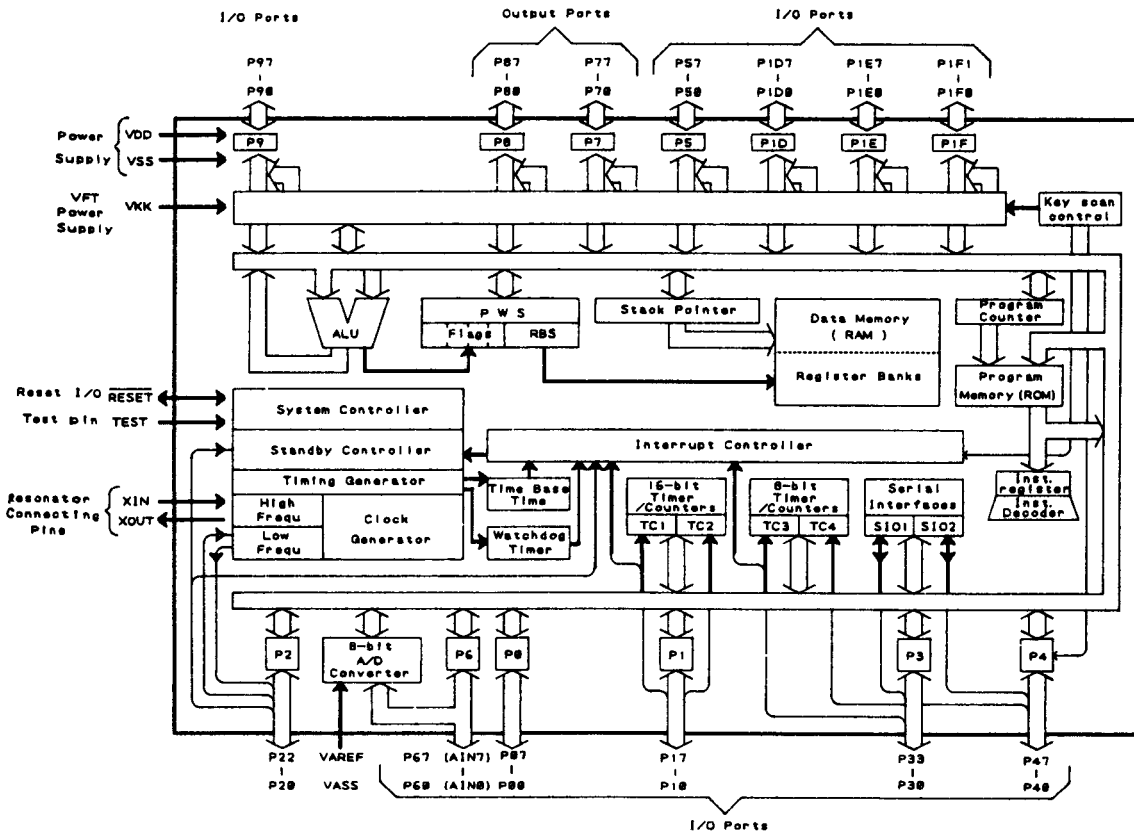


Pilot signal	Adjust for	Adjustment
ON	Different of R and L must be maximum	VR03

NOTE : In case of adjusting the stereo separation, of input is L (or R) channel, R (or L) channel must be maximum.

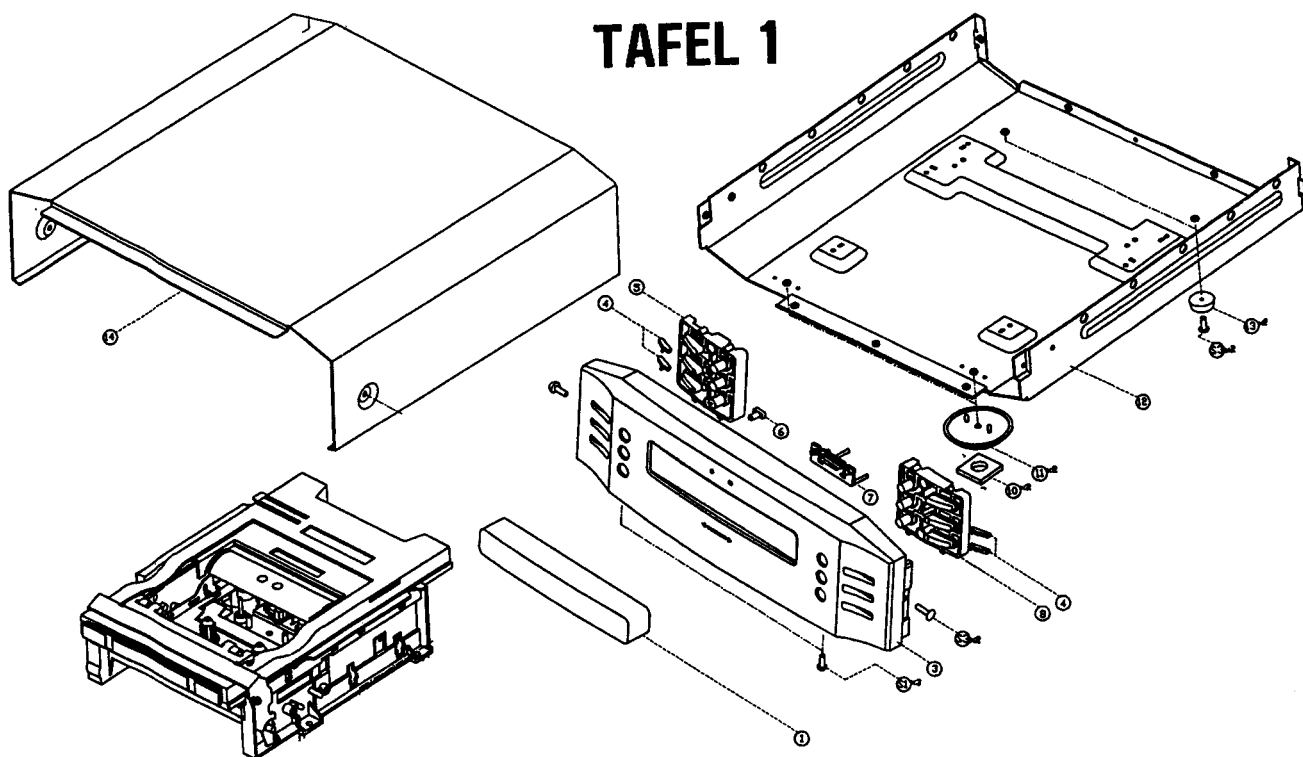


ABGLEICH-TUNER

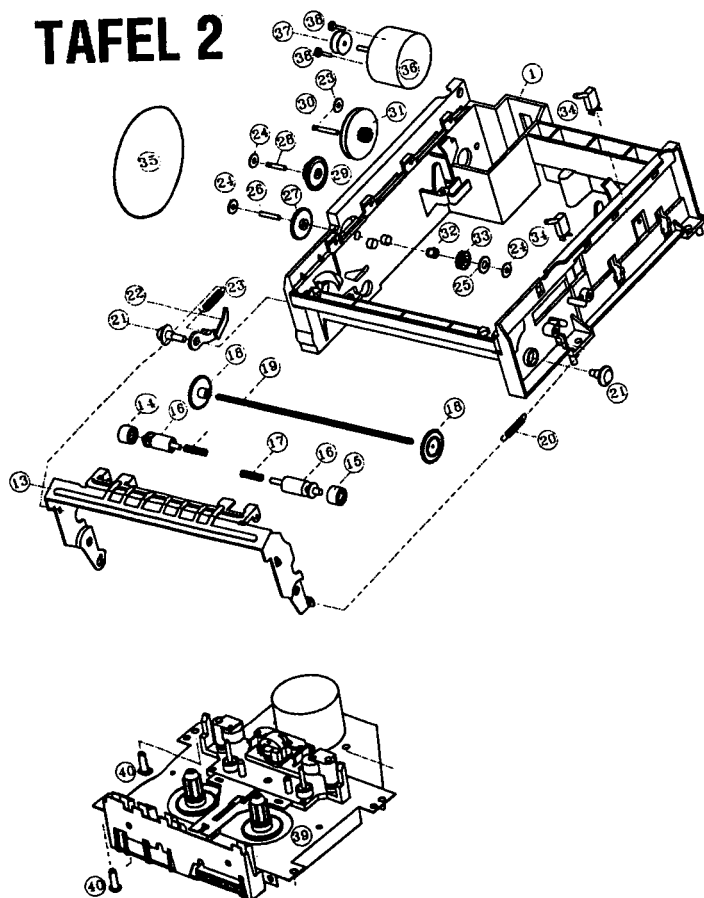
**PIN ASSIGNMENTS
(TOP VIEW)****BLOCK DIAGRAM**

EXPLOSION TAPE-DECK

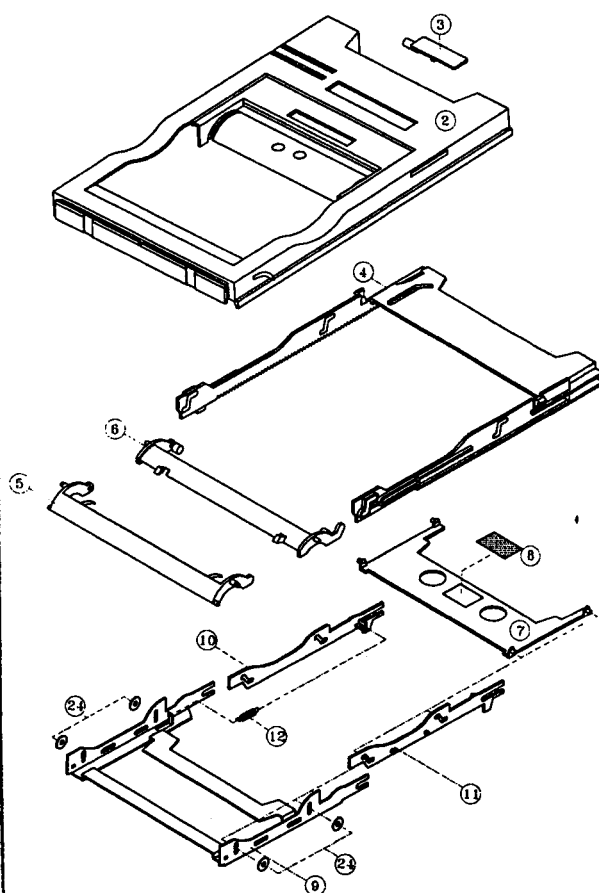
TAFEL 1



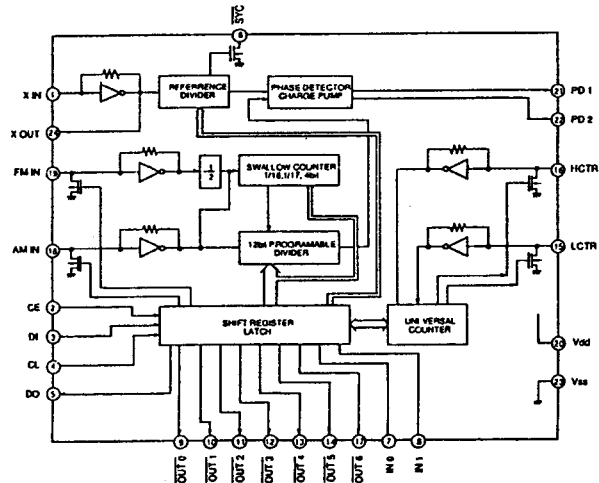
TAFEL 2



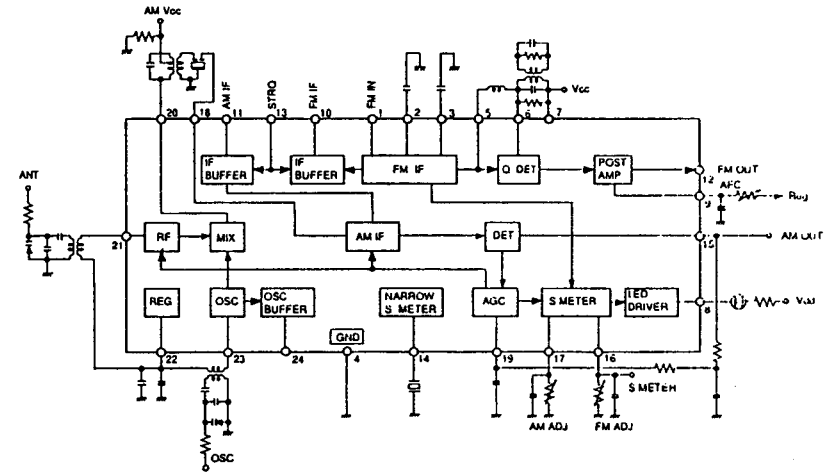
TAFEL 3



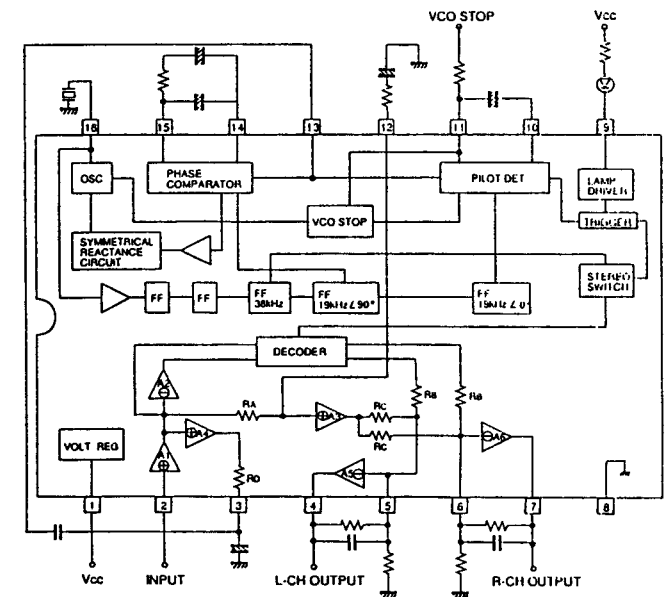
• LC7218 (PLL SYNTHESIZER)



• LA1266 (AM/FM IF AMP)

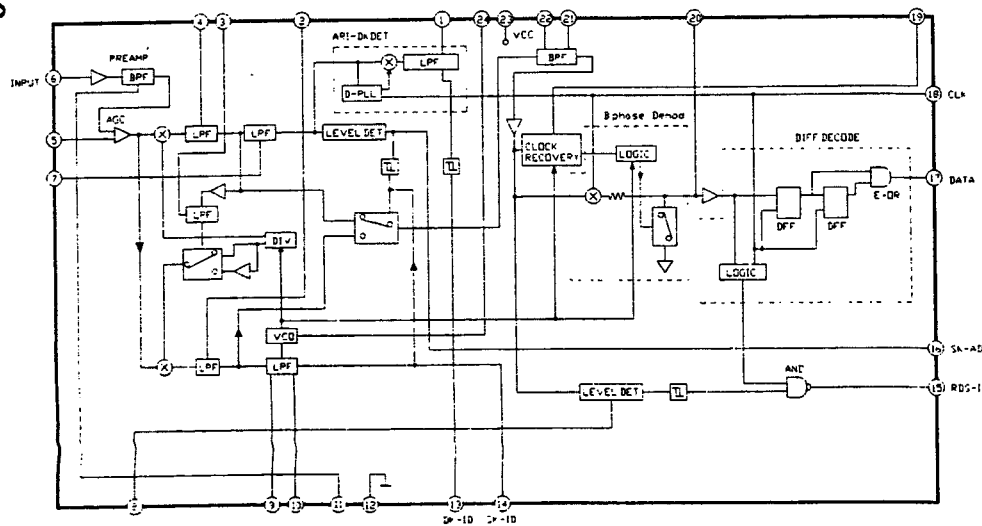


• LA3410A (PLL FM MPX DEMODULATOR)



LA2232

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MEASUREMENT AND ADJUSTMENT METHODS

- Measurement condition
- Dolby NR position: OFF
 - Make sure heads are clean
 - Make sure capstan and pressure roller are clean.

MEASURING INSTRUMENTS

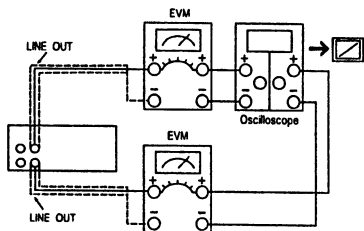
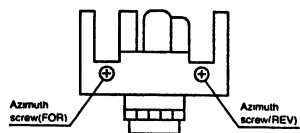
- EVM(Electronic Voltmeter)
- Oscilloscope
- Frequency counter
- AF Oscillator
- DC Voltmeter
- ATT(Attenuator)
- Resistor (600Ω)

Test tape

- Head azimuth (10KHz, -10dB): MTT-114N
- Tape speed(3KHz, -10dB): MTT-111N
- Playback frequency response (125Hz, 1KHz, 10KHz, -10dB)
- Playback gain: MTT-150
- Blank tape
- Normal blank tape: MTT-5511
- CrO₂ blank tape: MTT-5561
- Metal blank tape: MTT-5571

HEAD AZIMUTH ADJUSTMENT

1. Test equipment connections are shown in fig. 1.
2. Playback the head Azimuth test tape and regulate the angle adjust screw so that the outputs of L-ch and R-ch are maximized. (When the adjusting positions are different with L-ch and R-ch, find a position where the outputs of L-ch and R-ch are balanced and then make the adjustment.)
3. At the same time, obtain a lissajous waveform and eliminate phase deflection.
4. After the adjustment, apply screw lock to the angle adjusting value.

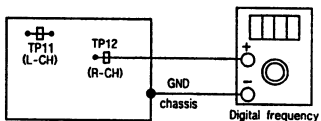


(FIG. 1)

TAPE SPEED ADJUSTMENT

1. Test equipment connections are shown in fig. 2.
2. Playback the middle part of the test tape.

Adjustment point	VR41
Standard Value	3,000Hz ±30Hz

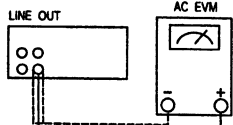


(FIG. 2)

PLAYBACK GAIN ADJUSTMENT

1. Test equipment connections are shown in fig. 3.
2. Playback the playback gain test tape. (MTT-150).
3. Adjust playback gain.

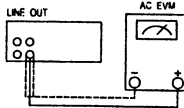
Adjustment Point	L ch : VR11	R ch : VR12
Standard Value	548mV	



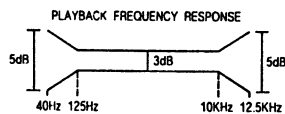
(FIG. 3)

PLAYBACK FREQUENCY RESPONSE

1. Test equipment connections are shown in fig. 4.
2. Playback the playback frequency response test tape.
3. Check that the frequency response is within the range shown in Fig. 5 for both L-ch and R-ch.



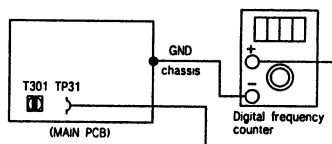
(FIG. 4)



(FIG. 5)

BIAS FREQUENCY ADJUSTMENT

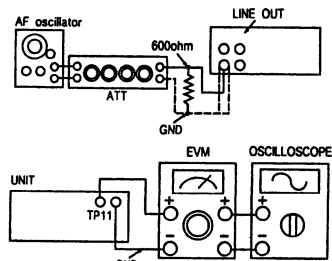
1. Test equipment connections are shown in fig. 6.
2. Load a CrO₂ blank test tape.
3. Press the record and pause button.
4. Adjust T301 for 105KHz frequency counter reading.



(FIG. 6)

OVERALL GAIN ADJUSTMENT

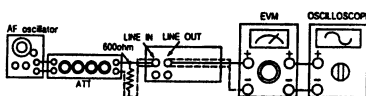
1. Test equipment connections are shown in fig. 7.
2. Insert the normal reference blank tape.
3. Place UNIT into recorder mode.
4. Supply a 1KHz signal through ATT (-10dB) from AF oscillator to line in.
5. Adjust ATT until monitor level at TP11 (L-ch) or TP12 (R-ch) becomes 180mV.
6. Playback recorded tape and make sure that the output level at TP11 (L-ch) or TP12 (R-ch) becomes 180mV.
7. If measured value is not 180mV, adjust it by using VR21 (L-CH) or VR22 (R-CH).
8. Repeat from step (2).



(FIG. 7)

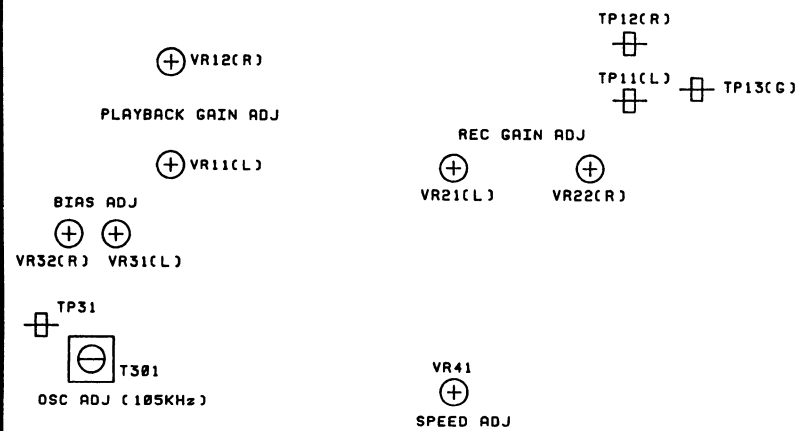
OVERALL FREQUENCY RESPONSE

1. Set a normal blank tape (MTT-5511) and record by apply signal (100Hz, 1KHz, 10KHz) through ATT from AF oscillator to line in (Line out Level: 33mV).
2. Playback the signal recorded in step 1, and check that the level of each output frequency is within the range shown in fig. 8 in comparison with the reference frequency (1KHz).
3. If it is not within the standard range adjust the bias current by using VR31 (L-CH) or VR32 (R-CH) so that the frequency level is within the standard.
- Level up in high frequency range...Increase the bias current.
- Level down in high frequency range...Decrease the bias current.
4. After that, increase the signal recorded on CrO₂ blank tape (MTT-5561) and metal blank tape (MTT-5571) up to 14KHz and adjust in the same way as mentioned above and check that the frequency level is within the range shown in Fig. 8.

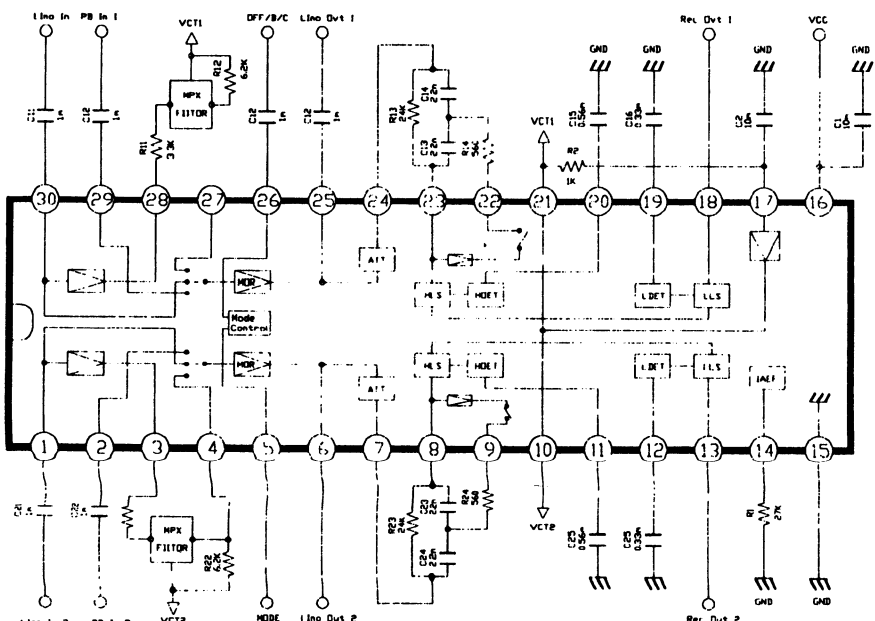


(FIG. 8)

DECK ADJUSTMENT POINT



CXA1331S (DOLBY B. C Noise Reduction System)

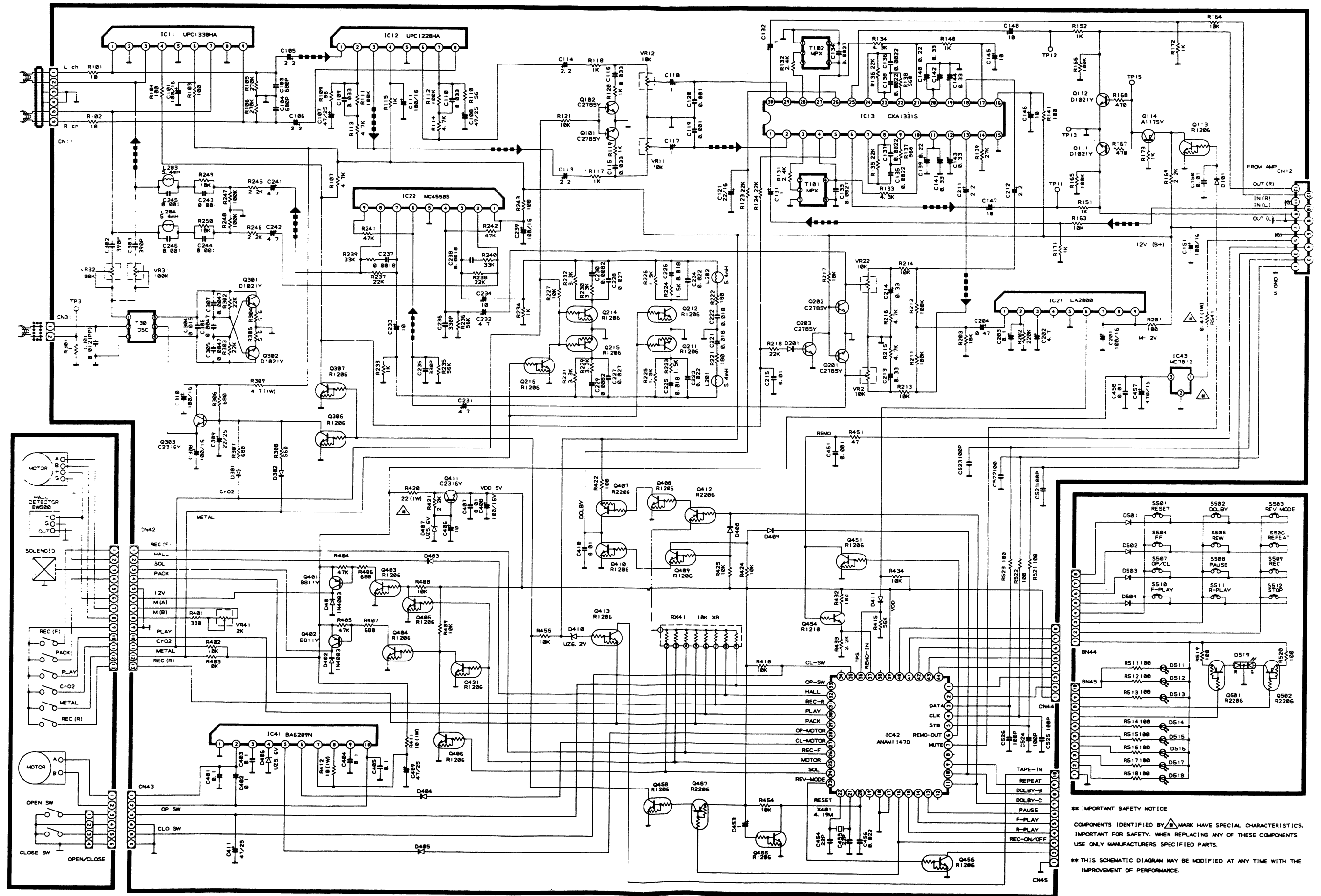


μ-COM IC(ANAM1147D)

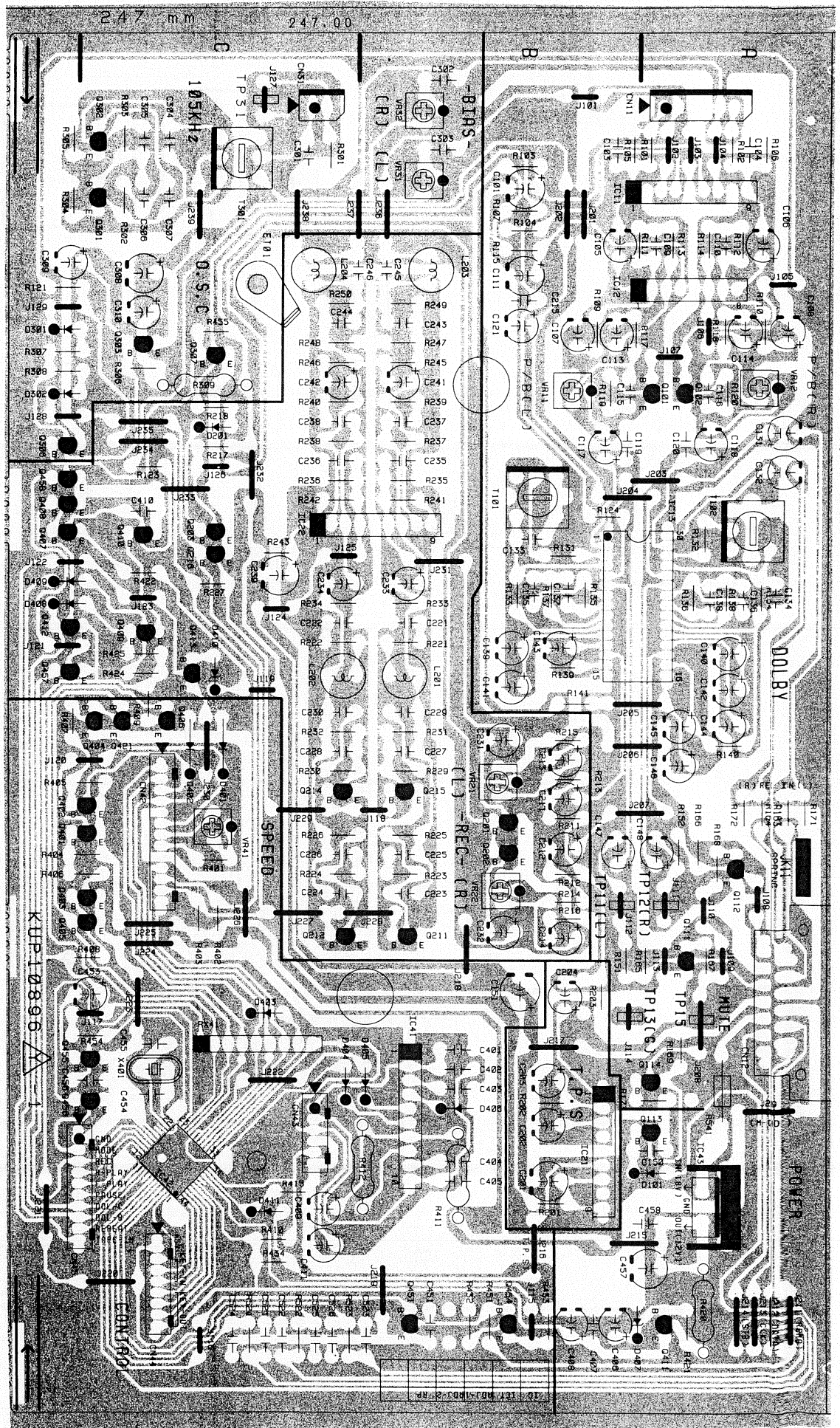
PIN No.	SYMBOL	IO	DESCRIPTION
40-43	P20-P23	I	KEY SCAN INPUT
44, 1, 2	P71-P73	O	KEY SCAN OUT
3	DATA	O	SERIAL DATA OUTPUT
4	CLK	O	SERIAL CLK OUTPUT
5	STB	O	SERIAL STROBE OUTPUT
6	REMO-O	O	REMOTE OUTPUT
7	MUTE	O	LINE MUTE
9	REPEAT	O	REPEAT LED DISPLAY
10	DOL-B	O	DOLBY-B OUTPUT
11	DOL-C	O	DOLBY-C OUTPUT
13	PAUSE	O	PAUSE LED DISPLAY
14	F-PLAY	O	FOR-PLAY LED DISPLAY
15	R-PLAY	O	REV-PLAY LED DISPLAY
16	REC	O	REC ON/OFF OUTPUT
17, 18	VSS	-	GND
20	RESET	I	RESET CONTROL PORT
21, 22	X1, 2	-	CRYSTAL IN/OUT PORT
23	MODE	O	REV-MODE LED DISPLAY
24	SOL	I	DECK SOLENOID CONTROL
25	MOTOR	I	DECK MOTOR CONTROL
26	REC-F	I	DECK FOR-REC SW DETECTOR
27	CL-MOT	O	LOADING CLOSE MOTOR CONTROL
28	OP-MOT	O	LOADING OPEN MOTOR CONTROL
29	PACK	I	DECK PACK SW DETECTOR
30	PLAY	I	DECK PLAY SW DETECTOR
31	REC-R	I	DECK REV-REC SW DETECTOR
32	HALL	I	DECK HALL IC DATA INPUT
33	OP-SW	I	LOADING OPEN SW DETECTOR
35	CL-SW	I	LOADING CLOSE SW DETECTOR
36	TPS	I	TPS DETECT PORT
37	REMO-IN	I	REMOTE INPUT PORT
39	VDD	-	VDD, +5V

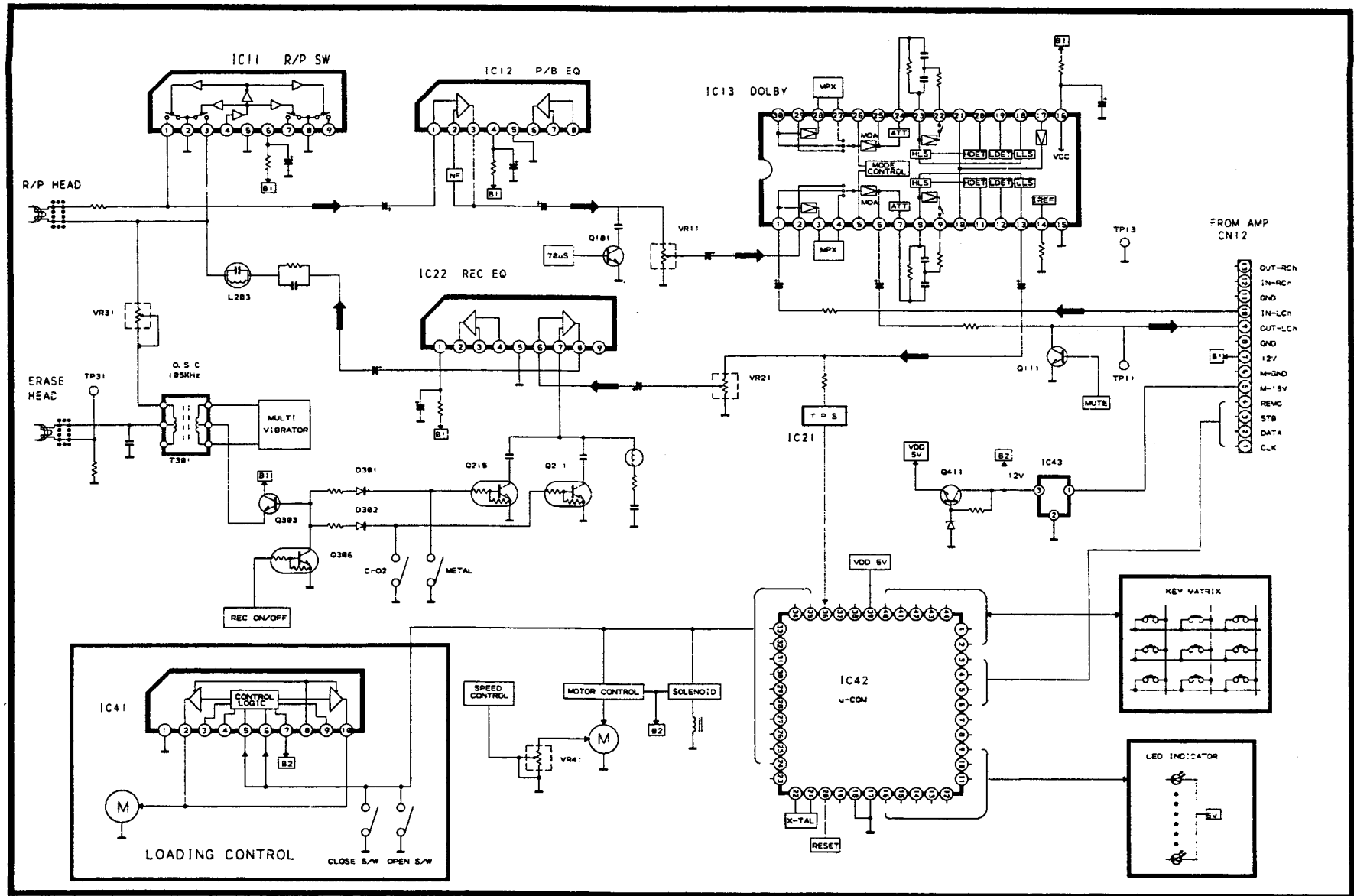
SCHEMATIC DIAGRAM

TAPE-DECK

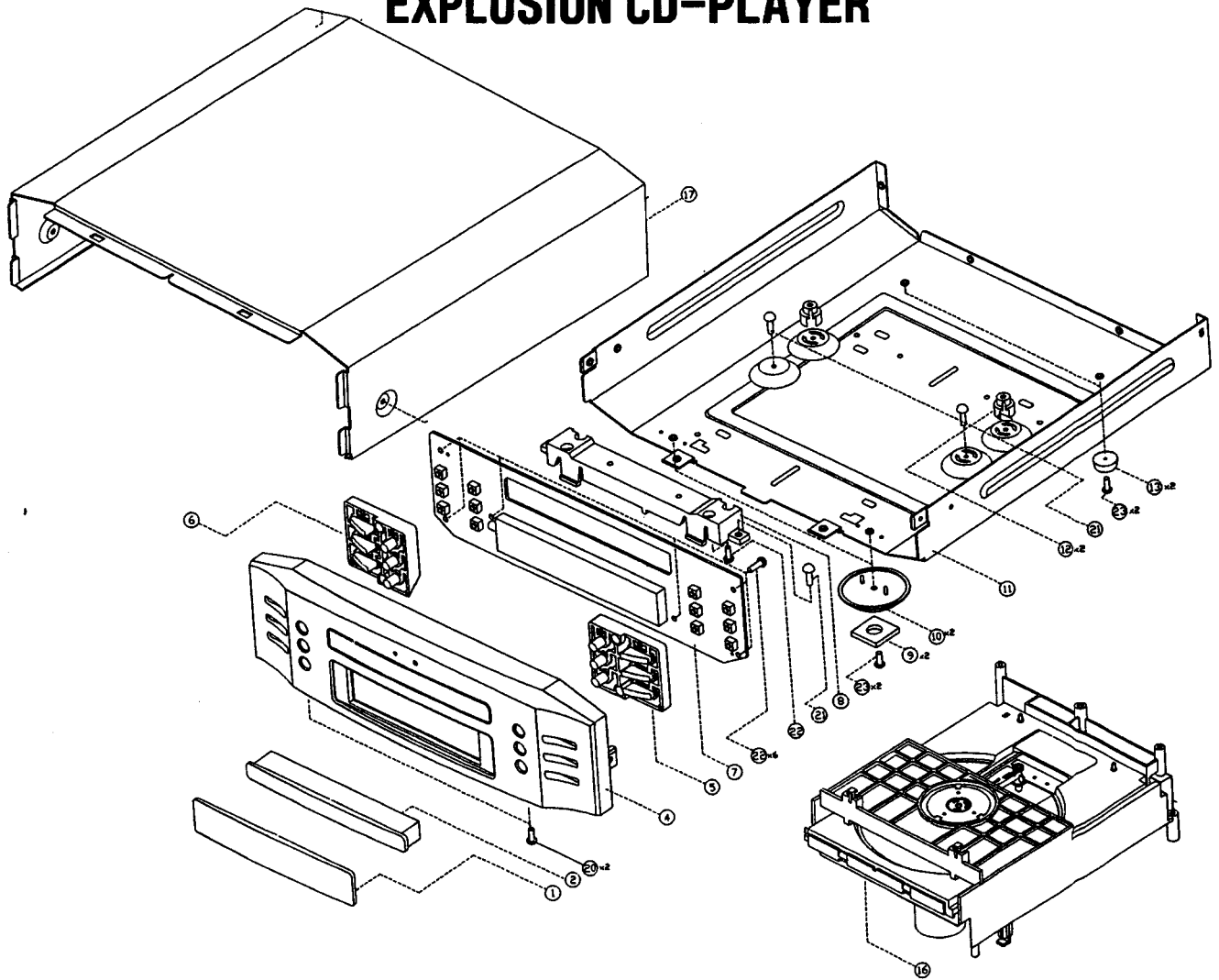


PLATINE TAPE-DECK

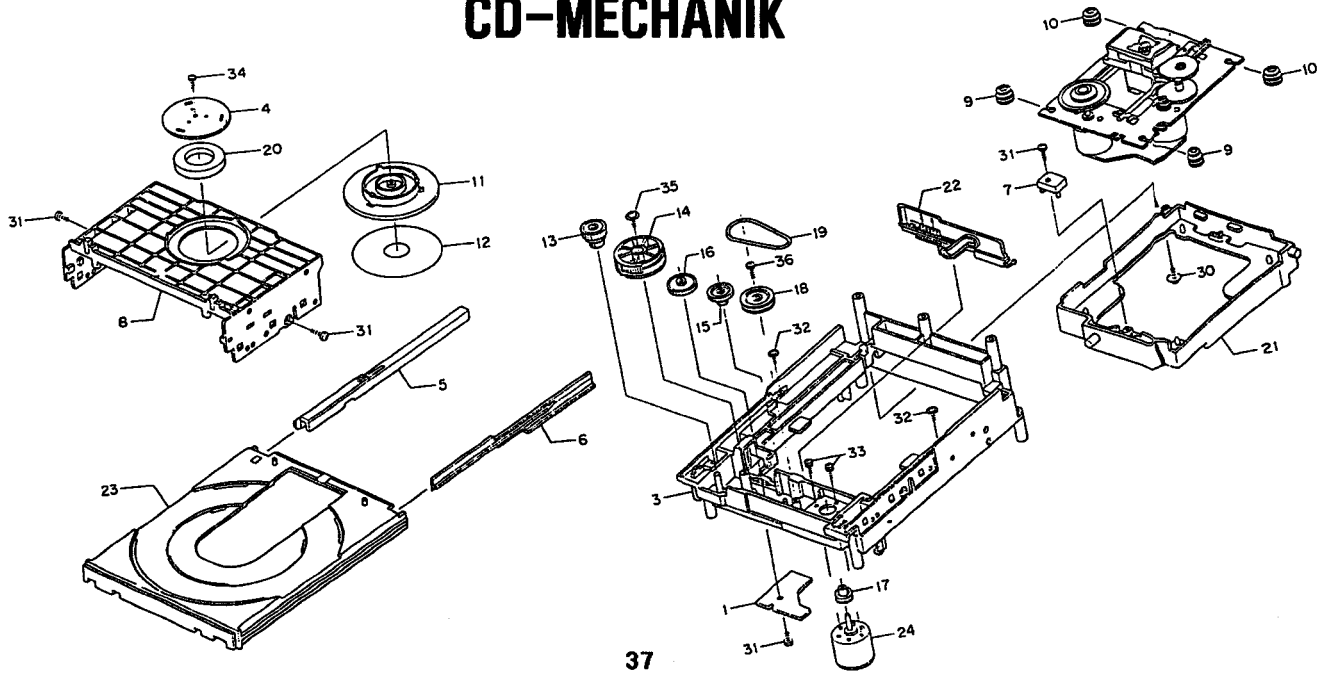




EXPLOSION CD-PLAYER



CD-MECHANIK



KA9220B (RF + SERVO AMP)

PIN No.	SYSTEM	DESCRIPTION
1	AVEE (R)	Analog negative power supply input pin for RF part
2	CPH	Capacitor connection pin of mirror hold.
3	CBH	Capacitor connection pin of defect bottom-hold
4	TESTD	Defect test pin
5	TESTM	Mirror test pin
6	Test1	Input pin for test
7	PFSET	Peak frequency setting pin for focus, tracking compensation and fc (cut off frequency) of CLV LPF.
8	SSTOP	Check the position pin of pick-up whether inside or not.
9	DIRC	Direct 1 Track jump Control Pin
10	AVCC (S)	Analog positive power supply input pin for SERVO part.
11	WDCH	Auto-sequencer clock-input pin (Normal speed)=88.2KHz, Double speed=176.4KHz)
12	SMPD	Connection pin of DSP SMPD
13	SMON	Connection pin of DSP SMON, spindle servo ON at "H"
14	N/C	No connection pin
15	TGSW	Providing time constant to change the high frequency tracking gain
16	RTG	Capacitor connection pin to switch the tracking gain of high frequency
17	LFR	Capacitor connection pin to perform rising low bandwidth of focus servo loop
18	FSW	High frequency gain of focus servo loop can be changed by FS3 switch ON or OFF
19	HFGD	Reducing high frequency gain with capacitor connected between pin 18 and pin 19.
20	FSCH	Time constant external pin to generate focus search waveform
21	VREGI	External regulator voltage input pin for VCO
22	ISSET	Determining the peak value of focus search, track jump and SLED kick
23	VREG	3.5V Regulator output pin
24	FVC	Pin connected external resistor to adjust free running frequency of VCO
25	SMEF	Providing an external LPF time constant of CLV SERVO Loop
26	BPE	Providing time constant for Loop filter of VCO
27	MCK	Clock input pin from micom
28	MLT	Latch input pin from micom
29	MDAT	Data input pin from micom
30	RESET	Reset input pin from micom, reset at "L"
31	LOCK	Pin for operation of the sled runaway prevention function at "L"
32	TRCNT	Track count output pin
33	ISTAT	Internal status output pin
34	AVEE (S)	Analog negative power supply input pin for SERVO part
35	APDI	Input pin of DSP phase comparison output (PHAS)
36	F8M	Output pin of analog VCO Normal speed=8.64 MHz, Double speed=17.28MHz
37	AASC	Auto-Asymmetry control input pin
38	EFMO	EFM comparator output pin
39	SLEN	Non-inverting input pin of SLED SERVO amplifier
40	SLEO	Output pin of SLED SERVO amplifier

PIN No.	SYSTEM	DESCRIPTION
41	SLEI	Inverting input pin of SLED SERVO amplifier
42	TEST2	Test input pin to change speed mode Normal speed="H", Double speed="L"
43	SPDI	Inverting input pin of spindle servo amplifier
44	SPDLO	Spindle servo amplifier output pin
45	FCE	Inverting input pin of focus servo amplifier
46	FSEO	Output pin of focus servo amplifier
47	TKEI	Non-inverting input pin of tracking servo amplifier
48	TKEO	Output pin of tracking servo amplifier
49	N/C	No connection
50	ATS	Anti-shock input pin
51	TZC	Tracking Zero Crossing input pin
52	TE2	Tracking Error Servo input pin
53	TE1	Output pin of tracking Error Amplifier
54	TDFCT	Capacitor Connection pin for Defect Compensation of tracking servo
55	DVCC (S)	Digital positive power supply input pin for servo part
56	FE2	Focus error servo input pin
57	FE1	Output pin of focus error Amplifier
58	FDFCT	Capacitor connection pin for defect compensation of focus servo
59	FOK	Output pin of Focus ok comparator
60	LDON	Laser diode ON/OFF control pin
61	EI	Feedback input pin of E I-V amplifier
62	EO	Output pin of E I-V Amplifier
63	FBIAS	Bias pin of non-inverting input of focus error amplifier
64	DVEE (S)	Digital negative power supply input for servo part
65	RFI	Output Signal of RF summing amplifier is inputted through capacitor
66	RFO	Output pin of RF summing amplifier
67	RF-	Inverting input pin of RF summing amplifier
68	RV	Output pin of (AVCC + AVEE)/2 Voltage
69	CV	Bias input pin of Center Voltage buffer
70	LD	Output pin of APC amplifier
71	PD	Input pin of APC amplifier
72	AVCC (R)	Analog positive power supply input pin for RF part
73	N/C	No connection
74	PD2	Inverting input pin of RF I-V AMP2
75	PD1	Inverting input pin of RF I-V AMP1
76	F	Inverting input pin of F I-V AMP
77	E	Inverting input pin of E I-V AMP
78	P/N	Selecting P-sub/N-sub of Laser diode
79	DCC2	Defect bottom-hold output is inputted through capacitor
80	DCC1	Output pin of defect bottom-hold

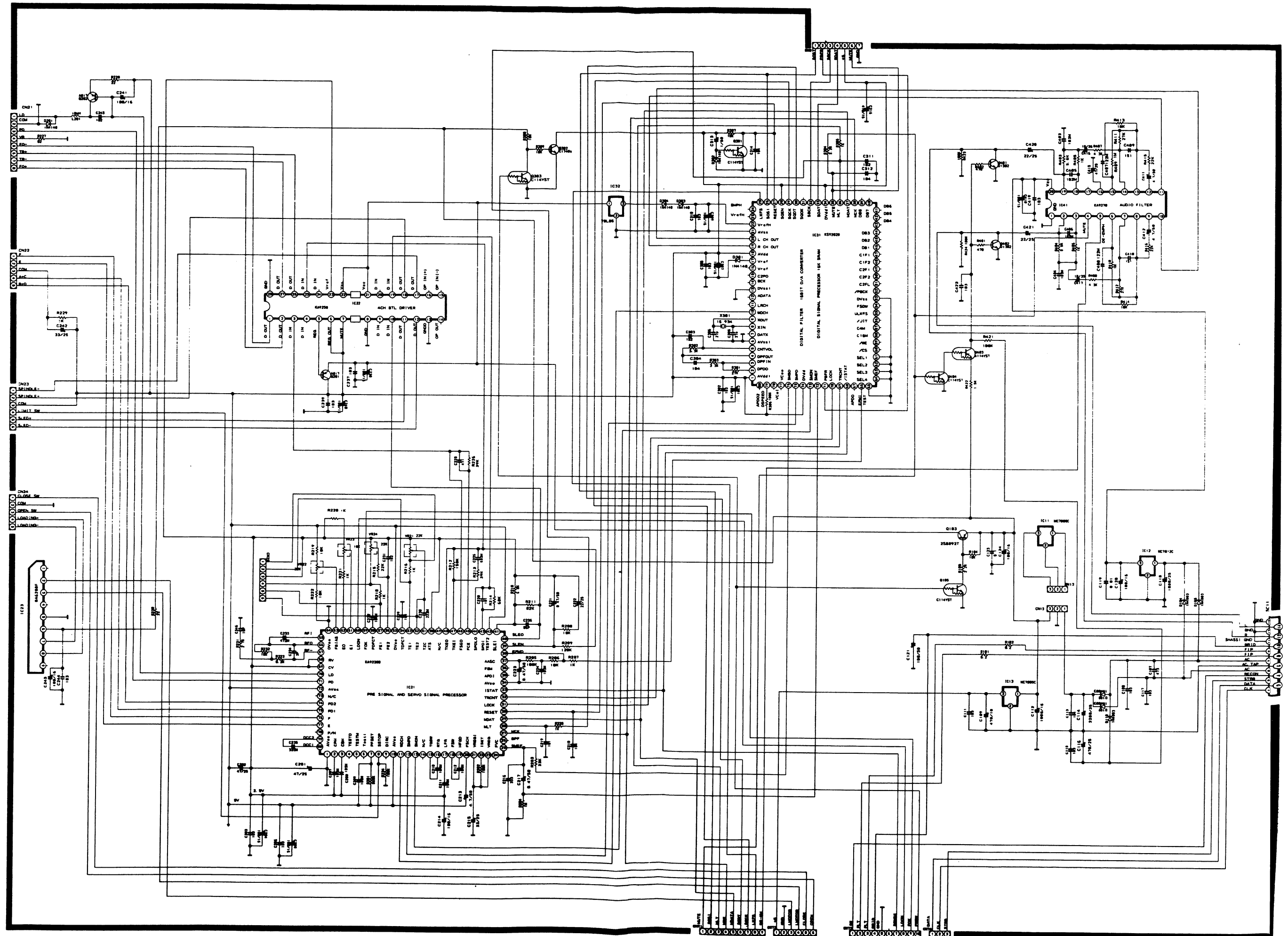
KS9282B (DSP + DAC)

PIN No.	SYMBOL	I/O	DESCRIPTION
1	AVDD1		Analog Vcc1
2	DPDO	O	Charge pump output for master PLL
3	DPFIN	I	Filter input for master PLL
4	DPFOUT	O	Filter output for master PLL
5	CNTVOL	I	VCO control voltage for master PLL
6	AVSS1		Analog Ground 1
7	DATX	O	Digital audio output
8	XIN	I	X-tal oscillator input
9	XOUT	O	X-tal oscillator output
10	WDCH	O	Word clock of 48 bit/SLOT (Normal speed=88.2KHz, Double speed=176.4KHz)
11	LRCH	O	Channel clock of 48 bit/SLOT (Normal speed=44.1KHz, Double speed=88.2KHz)
12	ADATA	O	Serial audio data output of 48 bit/SLOT (MSB first)
13	DVSS1		Digital Ground 1
14	BCK	O	Audio data Bit clock for 48 bit/SLOT (Normal speed=2.1168KHz, Double speed=4.2336KHz)
15	C2PO	O	C2 pointer for output audio data
16	VREFL2	I	Input terminal 2 of reference voltage "L" (Floating)
17	VREFL1	I	Input terminal 1 of reference voltage "L" (GND Connection)
18	AVDD2		Analog VCC2
19	RCHOUT	O	Right-Channel audio output through D/A Converter
20	LCHOUT	O	Left-Channel audio output through D/A converter
21	AVSS2		Analog Ground 2
22	VREFH1	I	Input terminal 1 of reference voltage "H" (VDD connection)
23	VREFH2	I	Input terminal 2 of reference voltage "H" (Floating)
24	EMPH	O	Emphasis/Non-Emphasis Output ("H": Emphasis)
25	LKFS	O	The Lock Status output of frame sync
26	SOS1	O	Output of subcode sync signal (S0 + S1)
27	RESET	I	System reset at "L"
28	SQEN	I	SQCK I/O Control ("L": internal CK, "H": external CK)
29	SQCK	I/O	Clock for output Subcode-Q data
30	SQDT	O	Serial output of Subcode-Q data
31	SQOK	O	The CRC check result signal output of subcode-Q
32	SBCK	I	CLOCK for output subcode-Q data
33	SDAT	O	Subcode serial data output
34	DVDD1		Digital Vcc1
35	MUTE	I	Mute control input ("H": Mute ON)
36	MLT	I	Latch Signal Input from Micom
37	MDAT	I	Serial data Input from Micom
38	MCK	I	Serial Clock input from Micom
39	DB8	I/O	SRAM data I/O Port 8 (MSB)
40	DB7	I/O	SRAM data I/O Port 7
41	DB6	I/O	SRAM data I/O Port 6
42	DB5	I/O	SRAM data I/O Port 5
43	DB4	I/O	SRAM data I/O Port 4

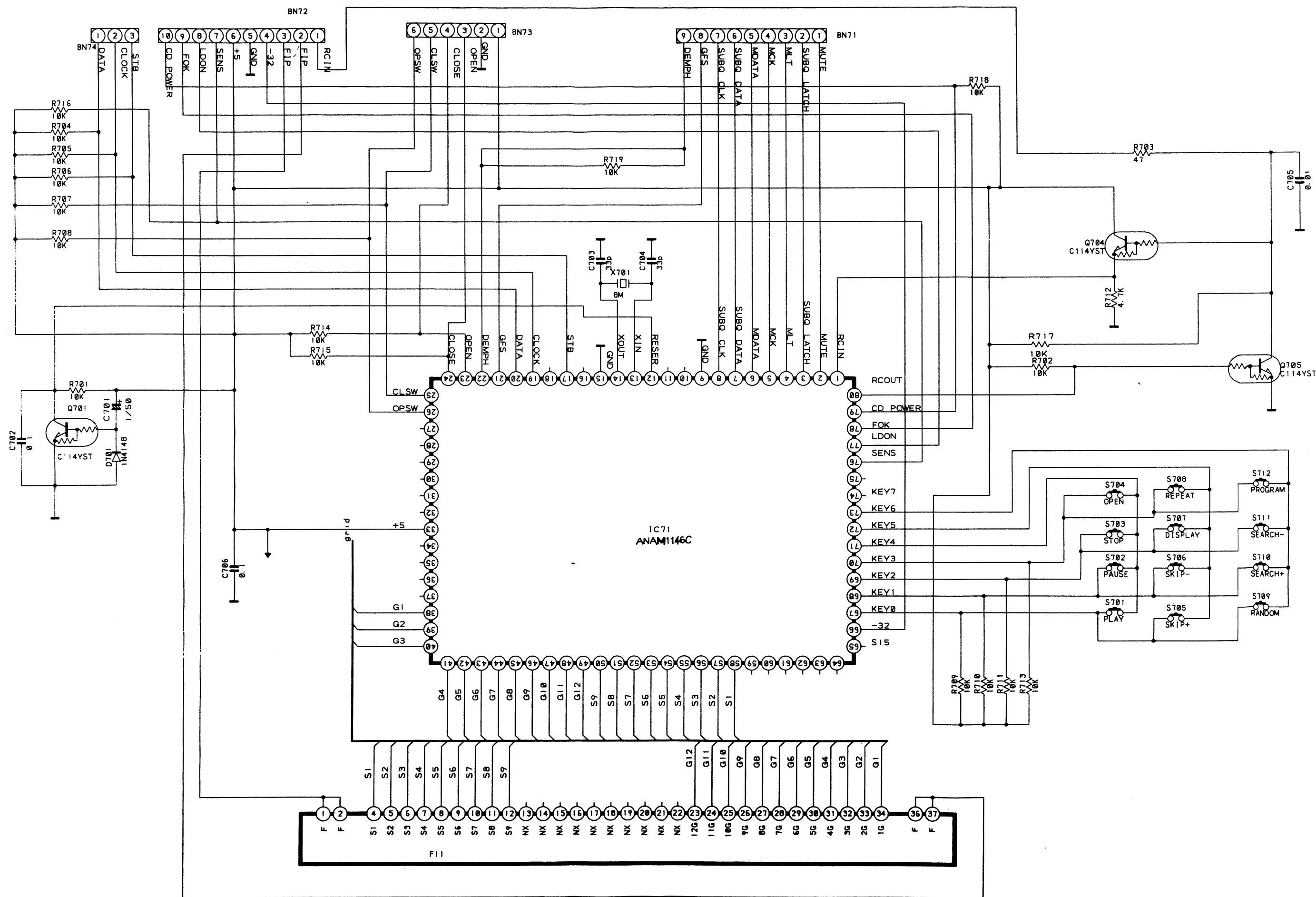
PIN No.	SYMBOL	I/O	DESCRIPTION
44	DB3	I/O	SRAM data I/O Port 3
45	DB2	I/O	SRAM data I/O Port 2
46	DB1	I/O	SRAM data I/O Port 1 (LSB)
47	C1F1	I/O	Monitoring output for C1 error correction (RA1)
48	C1F2	I/O	Monitoring output for C1 error correction (RA2)
49	C2F1	I/O	Monitoring output for C2 error correction (RA3)
50	C2F2	I/O	Monitoring output for C2 error correction (RA4)
51	C2FL	I/O	C2 decoder flag (High: When the processing C2 code is impossible correction state) RA5)
52	/PBCK	I/O	Output of VCO/2 (Normal speed=4.3218MHz, Double speed =8.6436MHz) (RA6)
53	DVSS2		Digital Ground 2
54	FSDW	I/O	Unprotected frame sync (RA7)
55	ULKFS	I/O	Frame sync protection state (RA8)
56	/JIT	I/O	Display of either RAM overflow or underflow for ±4 frame Jitter margin (RA9)
57	C4M	I/O	Only monitoring signal (Normal playback: 4.2336MHz) (RA10)
58	C16M	I/O	16.9344MHz signal output (RA11)
59	/VE	I/O	Terminal for test
60	/CS	I/O	Terminal for test
61	SEL1	I	Mode Selection Terminal 1 (H:33.8688MHz, L:16.9344MHz)
62	SEL2	I	Mode Selection Terminal 2 (H:APLL L:DPLL)
63	SEL3	I	Mode Selection Terminal 3 (H: CD ROM L:CDP)
64	SEL4	I	Mode Selection Terminal 4 (L: Internal SRAM)
65	TEST	I	Test Terminal (L=Normal operating state)
66	EFMI	I	EFM Signal input
67	APDO	O	Charge Pump output for analog PLL
68	/ISTAT	O	The internal status output
69	TRCNT	I	Tracking counter input signal
70	LOCK	O	Output signal of LKFS Condition sampled PBFR/16 (If LKFS is "H", Lock is "H" If the LKFS is sampled "L" at least 8 times by PBFR/16, Lock is "L")
71	PBFR	O	Write frame clock (Lock: 7.35KHz)
72	SMEF	O	LPF time constant control of the spindle servo error signal
73	SMON	O	ON/OFF control signal for spindle servo
74	DVDD2		Digital Vcc 2
75	SMPD	O	Spindle Motor drive (Rough control in the CLV-S mode Phase control in the CLV-P mode)
76	SMSD	O	Spindle Motor drive (Velocity control in the CLV-P mode)
77	VC001	O	Vco output signal (When the state is lock by means of PBFR, it is 8.643MHz)
78	VC011	I	VCO input signal
79	DSPEED	I	Double speed mode control (H:Normal Speed, L:Double Speed)
80	APD02	O	Analog PLL Charge Pump output for Double Speed mode

CD-PLAYER

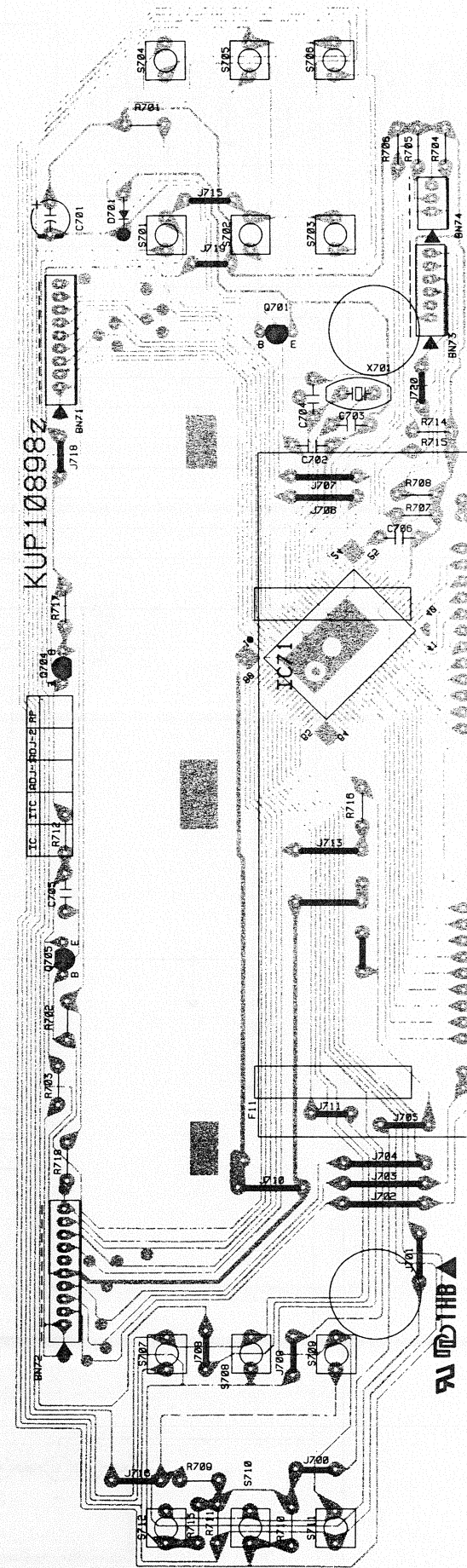
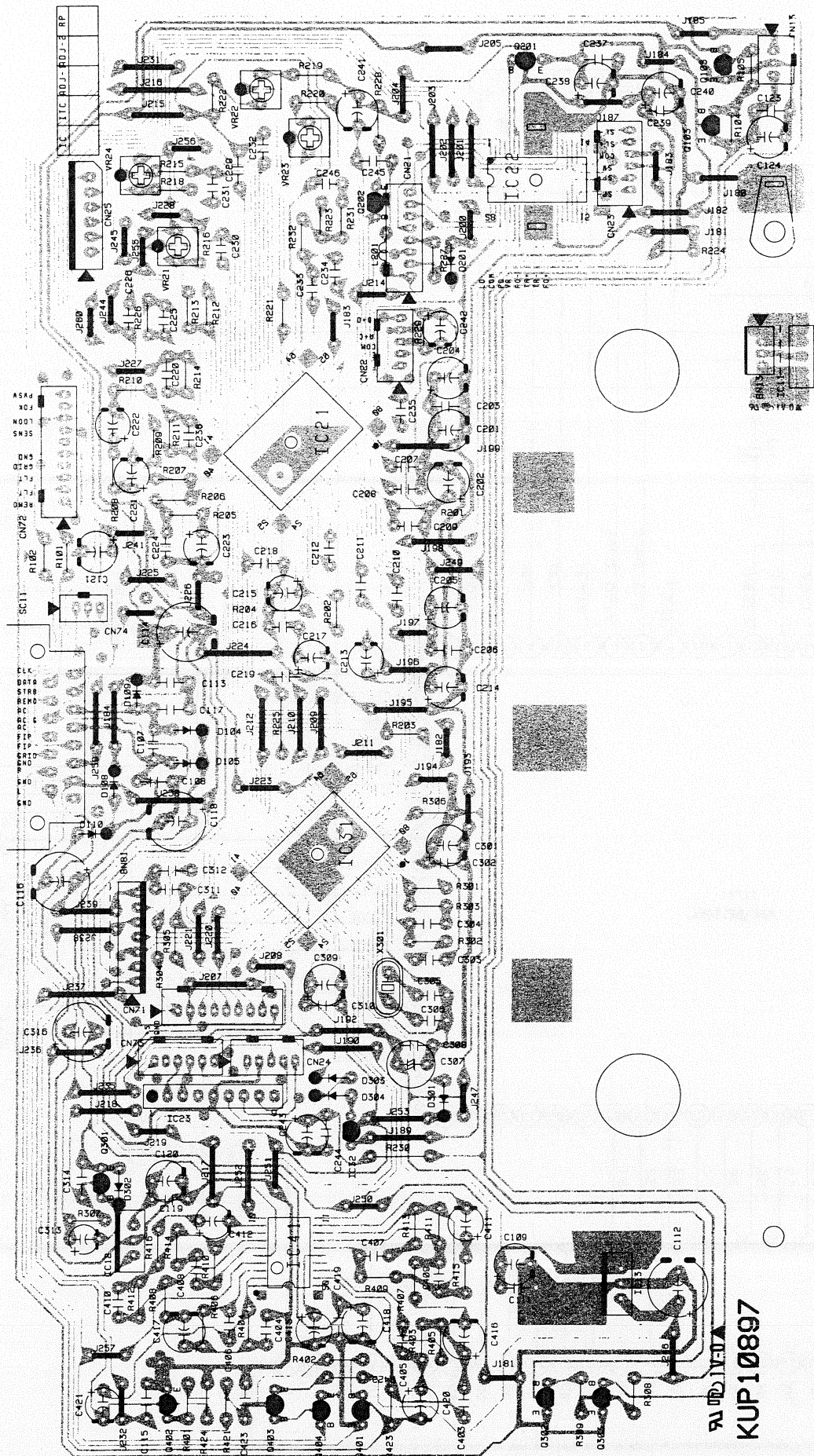




CD-PLAYER DISPLAY



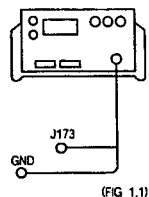
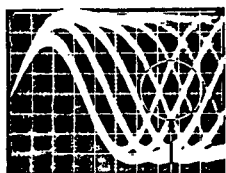
PRINTED CIRCUIT BOARDS



MEASUREMENTS AND ADJUSTMENTS

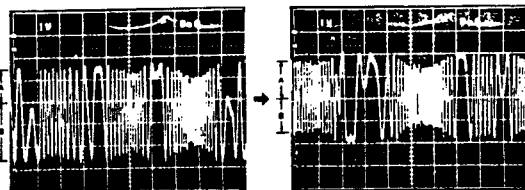
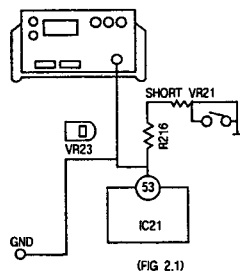
FOCUS OFF SET ADJUSTMENT

1. Test equipment connection is shown in Fig 1.1
2. Play the test disc.
3. Adjust (VR22) so that the eye pattern of RF Signal is open widest. (Fig 1.2)



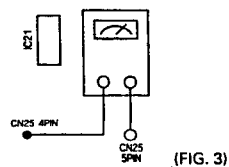
E/F BALANCE ADJUSTMENT

1. Position the baseline trace of the oscilloscope to the center horizontal graticule line.
Oscilloscope setting: VOLT1V/Div
SWEEP2msec/Div
2. Turn on the power switch and play the track 1 of test disc.
3. Connect the oscilloscope to R216 (Pin 53 of the IC 21) (See Fig 2.1).
4. Short the VR21 Turn Fully clockwise, adjust the VR23 so that A=B (See Fig 2.2).
Oscilloscope setting: VOLT1V/Div
SWEEP5msec/Div
INPUT COUPLING.....DC
5. When the F.L.T displays 00:00..., press the play button and repeat procedure.
6. After adjustment, VR23 is center.



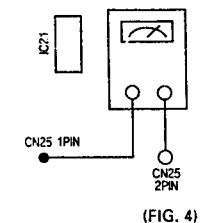
FOCUS GAIN ADJUSTMENT

1. Test equipment connection is shown in Fig 3.
2. Play the test disc.
3. Adjust VR24 until monitor level at VTVM becomes 200 mV. (AC)

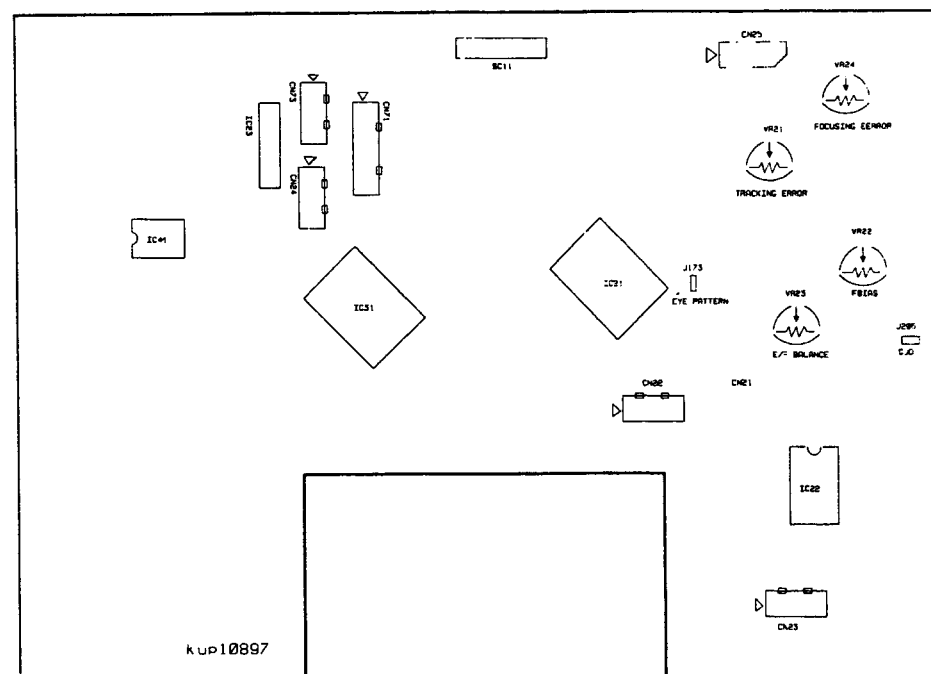


TRACKING GAIN ADJUSTMENT

1. Test equipment connection is shown in Fig 4.
2. Play the test disc.
3. Adjust VR21 until monitor level VTVM becomes 150mV. (AC)



■ ADJUSTMENT POINT



CD ABGLEICH

KA9258D (MOTOR DRIVER)

No.	SYMBOL	I/O	DESCRIPTION
1	DOL1	O	DRIVE OUTPUT
2	DOL2	O	DRIVE OUTPUT
3	DIL1	I	DRIVE INPUT
4	DIL2	I	DRIVE INPUT
5	REG	-	REGULATOR
6	VREG	O	VOLTAGE REGULATOR
7	MUTE	-	MUTE
8	GND1	-	GND
9	DI2.1	I	DRIVE INPUT
10	DI2.2	I	DRIVE INPUT
11	DO2.1	O	DRIVE OUTPUT
12	DO2.2	O	DRIVE OUTPUT
13	GND2	-	GND
14	OPOUT	O	OP AMP OUTPUT
15	OPIN (-)	I	OP AMP INPUT (-)
16	OPIN (+)	I	OP AMP INPUT (+)
17	DO3.1	O	DRIVE OUTPUT
18	DO3.2	O	DRIVE OUTPUT
19	DI3.1	I	DRIVE INPUT
20	DI3.2	I	DRIVE INPUT
21	Vcc1	-	Voltage Regulator (+8V)
22	Vcc2	-	Voltage Regulator (+8V)
23	VREF	-	2.5V BIAS REGULATOR
24	DI1.1	I	DRIVE INPUT
25	DI1.2	I	DRIVE INPUT
26	DO1.1	O	DRIVE OUTPUT
27	DO1.2	O	DRIVE OUTPUT
28	GND3	-	GND

IC71 (μ-COM)

PIN No.	SYMBOL	I/O	DESCRIPTION
1	RCIN	I	REMOCON data input
2	MUTE	O	MUTE signal output
3	SUBQ LATCH	I	Sub code sync signal (S0+S1)
4	MLT	O	Latch signal output
5	MCK	O	Serial Clock output
6	MDATA	O	Serial data output
7	SUBQ DATA	I	Serial input of Subcode Q data
8	SUBQ CLK	I/O	Clock for output subcode Q data
9	GND	-	
10		-	Non connection
11		-	Non connection
12	RESET	-	Reset port
13	XIN	I	Ceramic oscillator input. 8MHz
14	XOUT	O	Ceramic oscillator output
15	GND	-	
16		-	Non connection
17	STB	I	Strobe input from DECK
18		-	Non connection
19	CLOCK	I	Clock input from DECK
20	DATA	I	Data input from DECK
21	GFS	I	The Lock Status input of fram sync
22	DEMPH	O	Emphasis/Non Emphasis output ("H": Emphasis)
23	OPEN	O	Loading Motor open output
24	CLOSE	O	Loading Motor close output
25	CLSW	I	Close limit switch
26	OPSW	I	Open limit switch
27~32		-	Non connection
34~37		-	Non connection
38~49	G1~G12	O	Grid output data
50~58	S9~S1	O	Segment output data
59~65		-	Non connection
66	Vp	-	FLT power port (-32V)
67~73	KEY0~KEY7	-	Key read input port
76	SENS	I	The internal status input from DSP
77	LDON	O	Laser diode ON/OFF control port
78	FOK	I	Focus ok comparator pin
79	CD POWER	O	Power ON/OFF switch control port
80	RCOUT	O	Remocon data output